NMCI Design Reference Mission (DRM)

(Version 2.1.1b)

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Prepared for:
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by

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1 INTRODUCTION

1.1 PURPOSE

This Design Reference Mission (DRM) provides a summary of the Department of the Navy (DoN) Information Technology (IT) environment for use by Industry Proposal Teams in the preparation of proposals for the Navy/Marine Corps Intranet (NMCI). The DRM defines NMCI's operational environment. The DRM is provided as reference information to the contractor and is not contractualy binding.

The DRM describes the Navy and Marine Corps' functional activities and the related IT activities that support them in terms of the stress they place on the IT infrastructure. The DRM uses a geopolitical scenario to generate and approximate the range of operational activities that occur during peacetime and during one and two Major Theaters of War (MTW), to explain the Navy and Marine Corps user environment that NMCI must support. All demographic and geographic tables are not contractually binding. They reflect a point in time and are not to be considered the most current information. Conflicting data is due to different sources or views.

The DRM is described in terms of seven general operational and functional areas, each including specific mission functions and supporting IT infrastructure. Each operational/functional area is different in terms of the nature and intensity of IT activities, both during peacetime and during changes in op tempo. Likewise, functional area IT managers place varying importance on individual IT services in each given scenario. Not every possible scenario is described in the DRM; only those which may stress the IT Infrastructure, and, where those stresses are expected to occur during the course of Naval Operations.

1.2 APPROACH

The DRM describes the NMCI operating environment, provides a means to evaluate alternative approaches, and defines the minimum set of services that must be part of any solution. There are two separate DRM focus areas:

> Functional Analysis. Chapter 3 provides the IT environment is first divided into seven general operational and functional area categories that coincide with the specific functional mission areas of the Navy and Marine Corps. For each of these seven operational/functional areas, a functional description summarizes the mission area and NMCI services that must support that area, during peacetime and during the increased op tempo requirements of one and two MTWs. The approach is further described in chapter 2 and the actual Navy and Marine Corps analyses are contained in chapter 3. The purpose is to describe the range of IT environmental stresses that might be experienced during Navy and Marine Corps operations over time. Information Assurance (IA) (Computer Network Defense (CND), Computer Emergency Response Teams) is an important activity that is considered during the analysis of each of the above operational/functional areas.

a) Operational/Tactical (Fleet, Integrated Reserves, Meterology-Oceanography, Intelligence, Cryptology, Headquarters, Information Warfare (IW))

b) Logistics (Supply, Maintenance, Transportation, Installation, Facilities)

c) Personnel (Manpower, Reserves, Personnel Support Activity, Disbursing, Accounting)

d) Training and Education

e) Acquisition (Systems Commands, Engineering, Test and Evaluation (T&E), Financial)

f) Medical and Dental

g) Base Operating Support (Air Operations, Pier Services, Security, Public Affairs Officer, Legal, Food, Quality of Life)

> Geographical Analysis. Geographical area analyses, chapter 4, are formulated by aggregating operational/ functional activity profiles according to the demographics of major geographic areas. The impact of high stress mission/users in a densely populated geographic area is revealed. Also, specific NMCI services are isolated and their specific impact in particular geographic areas are shown.

1.3 NMCI GOALS

While global network connectivity is essential to achieve information superiority, it alone is not sufficient. The entire information infrastructure, to include enterprise systems and data, must be planned, coordinated and aligned

under a single, coherent and forward-looking strategy. The information infrastructure must collectively enable the warfighters and decision makers to be provided the right information, at the right place, at the right time, and in the right format. Therefore, the NMCI solution and strategy must be aligned with and support a wide range of current and future DoN initiatives to reengineer business processes and support evolving warfighting operational concepts. Specific NMCI goals include the following:

- Provide migration from current DoN IT environment to NMCI environment with minimal negative impact on current and projected operations
- Remove access, connectivity, and throughput impediments to productivity and speed of command
- Quickly and securely share knowledge around the globe
- Eliminate interoperability problems
- Align NMCI solutions and strategies to support related initiatives that improve information management
- Reduce cost of voice, data, and video services
- Ensure the implementation strategy provides a continually advancing level of capability and performance
- Ensure the highest level of customer satisfaction through continuous monitoring, rapid resolution of incidents, and technology refreshment to ensure NMCI exceeds evolving demands for service.

1.4   CONCEPT OF OPERATIONS (CONOPS)

NMCI must address IT as a service, rather than as a commodity, and provide the following DoN specific attributes:

- Enhanced information exchange capability for deployed forces.
- Operational direction under the Navy and Marine Corps.
- Support of Network Centric Operations.
- Flexibility to support both peacetime operations and low-intensity conflict/military operations other than war and major theater war.
- Capability to transition from current IT environment without impacting operations.
- A total force, end-to-end solution.
- Solutions that are forward thinking have the ability to be continually updated for new processes, operational concepts, requirements and technology, and be adaptable to changing threats.
- Standards-based.
- Plug-and-play interoperability in applicable environments, including IT for the 21st Century (IT-21), Joint, Coalition, and Host Nation in support of US National Policy goals.
- Support for Business Process Engineering.

1.5   SCOPE

The capability and performance of NMCI will extend across all bases, camps, stations, and activities. NMCI will comprise multiple Service Delivery Points (SDPs) All modernization, upgrades, and technology refresh will occur over the NMCI contract life cycle.

There is an essential difference between the definitions of "end point" in Navy and Marine Corps implementations. For Navy, the end point is pierside. NMCI services do not extend to deployed units. Deployed units are the domain of the IT-21 initiatives. For the Marine Corps, NMCI services (basic and selected optional) are provided directly to all users in the garrison environment. There is a distinction for Marines serving in the operating forces. For this user group, desktop hardware and software used in the garrison environment will be embarked to support those units when they deploy. Additional desktop hardware and software will be required when deploying forces are backfilled by activated Marine Corps Reserves.

The NMCI will initially support over 360,000 workstations at approximately 300 Navy and Marine Corps bases at various Continental United States (CONUS) and Hawaii locations. The OCONUS component of the NMCI will be a complementary, but separate effort. NMCI will be tightly integrated, fully interoperable, and part of the end-to-end capability required of the DoN Enterprise Network.

NMCI will interface with a number of service delivery points (SDPs) that service tactical end users, including IT-21

Fleet NOC SDPs, Pierside SDPs, and hybrid seats.

3

1.6   INFORMATION ASSURANCE

In addition to the significant benefits of NMCI worldwide network connectivity, there is a corresponding increase in the potential for network based IW attacks. To counter these threats, the DoN must deploy an effective strategy (security architectures, policies, procedures, and tactics) of aggressive active CNDs within NMCI. The DoN network defense must be viewed as defensive Informational Warfare (IW) activity, rather than simply an information technology. DoN intends to pursue an aggressive outsourcing strategy for the design, deployment, and operation of NMCI, however, it is important to note that critical security roles will only be performed by authorized DoN personnel. These security roles include ensuring that the security of NMCI satisfies DoN, DoD, and Federal requirements, and exercising essential command authority over DoN defensive IW activities. The NMCI will be expected to implement network security guidance and configurations into their architecture and implementations, for example:

- Adherence to NMCI Layers 1 and 2 N-Level Internet Protocol Router Network (NIPRNET) and Secret Internet Protocol Router Network SIPRNET Firewall Policy
- NMCI Security Requirements
- NMCI Security Policy documents.
- DoD Directive 5200.28, which mandates the security requirements for automated information systems,
- DoD Instruction 5200.40 on the DoD IT Security Certification and Accreditation Process (DITSCAP)
- Chairman, Joints Chiefs of Staff (CJCS) memo Information Operations Condition (INFOCON) covered in;
  - NAVADMIN 146/99,
  - SECNAVINST 5239.3 DoN Information Systems Security (Information Security) Program
  - OPNAVINST 5239.1B DoN IA Program

Consistent with these instructions and directives, all available government resources should be used to describe the IA environment in which NMCI must operate continuously and successfully to defend against various IW threats. Additionally, Network Defense Strategy: NMCI Active CND Strategy: Cyber-Centric Maneuver Warfare, as referenced in the Request for Proposal (RFP), will be used as a guideline for describing a notional approach for implementing Defense in Depth and CND activities.

In order to successfully implement IA within NMCI, the information architecture that will be implemented should be top down driven. The network security posture required should be defined by the required functionality within the enterprise information architecture. Also, NMCI should support centralized network control, standards, and configuration policies in order to effectively integrate and maintain a strong IA posture. NMCI should also support an enforceable policy across the entire information architecture.

DRM SERVICE DESCRIPTIONS

The primary objective of NMCI is to provide the IT services to support the Navy and Marine Corps operational and functional missions. This requires that NMCI be multi-dimensional in meeting diverse Navy and Marine Corps service delivery requirements and broad scoped in addressing the wide range of IT services necessary. A series of steps is provided in Figure 1 to define these service requirements.
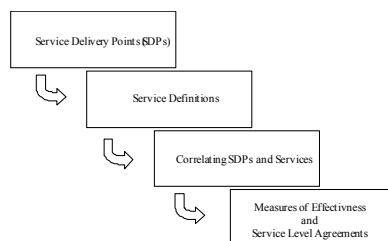
Figure 4 Defining NMCI Services

The mission requirements of the Navy and Marine Corps are unique because of their requirements for mobility, interoperability, survivability, and security. A set of Service Delivery Points (SDPs) can be determined that represents this range of requirements. It includes the traditional "seat" as an SDP but goes well beyond. It must address the multitude of communication environments and needs.

For the set of SDPs, it may not be appropriate to provide all services for each. There is a set of relationships and dependencies of SDPs to services that must be determined and accepted. These decisions include determining what is to be a basic service and what is to be an optional service. NMCI customers have varying requirements and these decisions must support the entire Navy and Marine Corps communities of interest.

Finally, the expectation for the performance of these services and the way that it is managed is a critical success factor. These will be articulated in the NMCI contract through service level agreements.

1.8   MEASURES OF EFFECTIVENESS

The NMCI provides a critical set of infrastructure technology services that support the Navy and Marine Corps operational and functional missions. A set of MOEs have been defined to identify those parameters which are of greatest importance. The fundamental structure of the Measures of Effectiveness (MOEs) to be applied to NMCI is depicted in Table 1. There are three top-level MOE components – Assurance, Capacity, and Responsiveness – that are the heads of MOE families that collectively define all of the relevant characteristics and performance of the NMCI. These are the "first tier" of the multi-tiered series of measurable units. The second tier, for example, Availability, Survivability, and Integrity in the case of Assurance, provide increasing specificity and detail in defining the measurable areas of performance. There are three tiers of the MOE hierarchy presented, and there may be cases in measuring the NMCI services where even more tiers of granularity are required to adequately address the wide range and distribution of NMCI services. MOEs are defined to provide the characteristics desired of the NMCI.

Tier 1	Tier 2	Tier 3
Assurance	Availability	Average Availability
	Survivability	Physical Survivability
		Electronic Survivability
	Integrity	Configuration Integrity
		Data Integrity
Capacity	Latency	Network Delays
		Application Delays
	Scalability	Interoperability
		Reconfigurability
		Geographic Expandability
Responsiveness	Customer Service & Support	Customer Satisfaction
		Help Desk Support
		Technology Insertion Latency
	Network Support	Recovery Latency
		Security Report Latency
	Training & Sea-Shore Rotation	Execution Effectiveness

Table 1 Measure of Effectiveness Matrix

The definitions of these MOEs are intended to provide guidelines on how these could be measured.

1) **Average Availability:** The proportion of seats at which network services are available and fully functional during a given period of time.

2) **Physical Survivability:** System is required to be available to authorized users when needed by withstanding physical intrusion or disruption.

3) **Electronic Survivability:** System is required to have ZERO successful unauthorized intrusions, and have adequate countermeasures for defense against Denial of Service attacks. This will be measured during the same cycle as Average Availability.

4) **Configuration Integrity:** System is required to be available to authorized users when needed by withstanding system and data corruption that results from unnecessary modifications or configuration errors.

5) **Data Integrity:** A measure of the effect on system integrity of data loss or corruption. It can be measured by examining help desk call records and NAVCERT reports.

6) **Network Delays:** Network transmission delays.

7) **Application Delays:** Processor delays.

8) **Interoperability:** System resources and components are required to have the capability to interface seamlessly with external systems.

9) **Reconfigurability:** System resources and components are required to have the capability to be reconfigured in response to changing operational conditions.

10) **Geographic Expandability:** System resources and components are required to have the capability to be expanded into new geographical areas as a function of changing requirements over time.

11) **Customer Satisfaction:** Satisfaction of users with the system and services as determined by opinion surveys.

12) **Help Desk Support:** Capability of the system to provide users with technical support in solving system problems, as determined by standard industry best practices metrics.

13) **Technology Insertion Latency:** System customer service and support is required to meet customer needs and expectations when customers request increased functionality, capacity, or performance.

14) **Recovery Latency:** System is required to detect, respond and recover from all network outages, restoring steady-state network and server availability.

15) **Security Report Latency:** System is required to report all network outages.

16) **Execution:** System is required to train Navy and Marine Corps personnel in the use of NMCI, and to maintain system administrator and other IT personnel skills during sea-shore rotation.

17) **Effectiveness:** System is required to provide training that improves the operational abilities of the users.

To qualify as an MOE, a measure must do the following:

- Be a meaningful indicator of end-to-end NMCI service delivery performance (or provide an indication of how proactively the provider is addressing infrastructure performance needs)
- Represent a factor or factors that can be addressed and influenced by the provider.
- Be measurable

2 DRM APPROACH, ENVIRONMENT, AND METHODOLOGY

2.1 INTRODUCTION

The DRM is intended to describe the Navy and Marine Corps "use environments" (both tactical and non-tactical). By considering a hypothetical scenario in which the Navy and Marine Corps would respond to external geopolitical events, a number of key Naval operational and functional user activities can be isolated and separately described, and their dependencies on supporting IT services identified and profiled. The DRM scenario presents the normal peacetime steady state, as well as varying degrees of increased operational tempo and specific occurrences, all of which represent both the normal and potential extreme "stresses" on the future NMCI.

The DRM includes two end products. The first is a series of notional IT infrastructure service profiles for each Navy and Marine Corps operational and functional (non-tactical) area (e.g., Operations, Logistics, Personnel, Training, Acquisition, Medical, Other Services). These profiles show the general tendencies in steady state as well as more demanding environments (e.g., mobilization to regional conflicts) that tend to characterize the outer limits of the demands placed on the IT infrastructure. Secondly, these operational/functional profiles are used to derive notional profiles for specific CONUS geographic areas, by linking types of users (operational and functional area) in geographic concentration areas with their corresponding user profiles. This characterizes the approximate stress on NMCI for each geographic area. The operational/functional profiles can be further broken down by selected network services (e.g., help desk, video-teleconferencing) to provide more specific tendencies and an indication of areas that may require greater focus during "due diligence."

The operative word for using this DRM is notional, but the results provide valuable information. As simply an introductory glimpse of the DRM product, the profile in Figure 5 provides a notional view of the aggregate NMCI customer profile as the U.S. responds to, and resolves, a two Major Theater of War contingency. The meaning and significance that can be attached to this profile are explained in the following text.
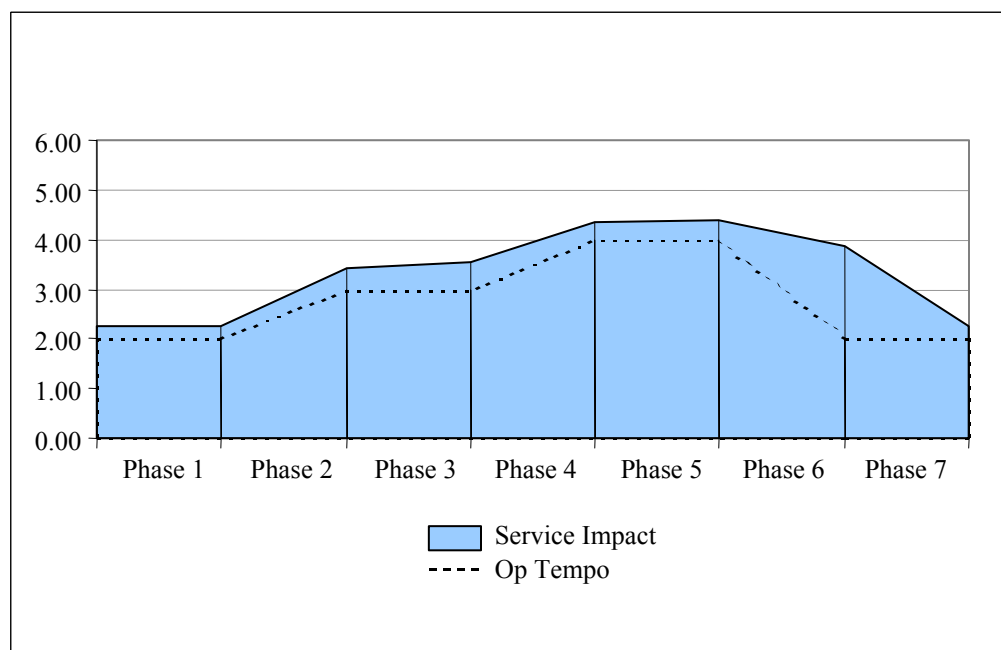
Figure 5. Notional Representation of Aggregate NMCI Customer Profile

Showing Service Level Indicator vs Phases

2.2   APPROACH

The levels of detail for the DRM scenario, descriptions and analyses are as follows:
- National Level
- Navy and Marine Corps Level
- Operational and Functional Area Level

The DRM begins with a national level scenario that includes a series of geopolitical and other outside events that affect U.S. interests and that require appropriate Navy and Marine Corps action. The DRM proceeds to a more detailed description of the resulting responses of DoD generally, and then to more specific discussions of the elements of the DoN. As Commander in Chief (CINC) and Service operational plans are executed, the operational and functional (supporting non-tactical function) organizations move quickly and deliberately to complete their required tasks. The demands placed on each DoN organization, functional area, and geographical region are varied in type, importance, and timeliness. The DRM examination provides a high altitude overview of the activities of the operational and functional areas of DoN in steady state, and in increasingly demanding contingency scenarios. Each of these operational/functional areas is directly dependent upon, and must be supported by, the set of services that comprise NMCI. The DRM seeks to characterize the nature of these demands for services, and to describe how these change with the conditions presented by the scenario.

The demand for basic and optional network services required by DoN users is not static. They vary in quantity and quality based on specific changes in the environment. By categorizing and describing the types of customers, explaining customer responses to changing conditions, linking their missions and businesses to their IT services, describing their special IT requirements, and geographically locating their user populations, a generalized description of IT service requirements emerges.

These IT service requirement descriptions are not intended to be empirical, but rather to describe relative values, magnitudes, tendencies, and importance. The most important of these services relative to each functional area are linked to MOEs that provide appropriate indication of the service provider's ability to satisfactorily meet IT requirements.

2.3   DRM ENVIRONMENT

2.3.1   National Level Scenario

A long period of peace is interrupted when the U.S. experiences rising hostilities and the outbreak of conflict in the Pacific, in the peninsula Country Red. The U.S. mobilizes in response to this threat. While this conflict is ongoing, Country Green once again threatens its neighbors in the Persian Gulf. The U.S. Fleet is on station in the Persian Gulf to ensure that UN sanctions remain in effect. USS Gray Ship is fired upon by an Exocet missile and heavily damaged. Other ships are diverted to the area.

As tensions rise, the U.S. military moves to address the conflicts in these separate regions of the world. Activities in the DoD accelerate. Forces mobilize, positioning of assets begins, and readiness conditions are raised. The government moves to re-institute the draft. Troops embark to both the Pacific and Persian Gulf Areas of Responsibility (AORs). Maritime Pre-positioned Ships (MPS) arrive at Country Red's peninsula and a three month conflict against Country Red ensues. Country Green likewise challenges the buildup of U.S. forces in their area and war ensues. Both conflicts are successfully resolved following 12 months of hostility and there is an immediate draw down of forces. The U.S. military returns to peacetime operations.

2.3.2   Navy and Marine Corps Scenario

The Navy and Marine Corps operate in peacetime in a continual state of planning for contingencies, training, and maintaining readiness. The requirement for IT services in peacetime represents only a fraction of the demand for network services that would be required during contingency activities, military responses, or war. The depiction in Figure 67 shows a notional view of the level of activities that would be required during "steady-state" (peacetime), moving into a Major Theater of War (MTW) (formerly called major regional contingency) requiring intervention of U.S. forces in some part of the world. This first MTW is followed immediately by an additional concurrent requirement for an MTW intervention in a second theater. A general description of the impacts of this scenario is provided in this section; a more detailed description by functional area is provided in the next section.
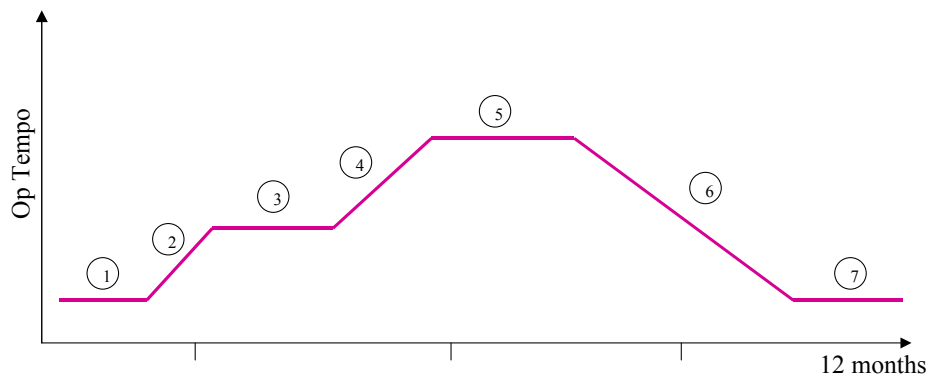
Figure 67. NMCI Operational Tempo Profile

The effects on Navy and Marine Corps organizations are most visible in the operational forces where Marines, sailors, and aviators perform their ground, sea, and air missions. These personnel and platforms are supported by a complex array of support functions that are heavily IT dependent for performance of their missions. Transition from steady state, surging to two MTWs, a top-level view of activities and their dependence on IT is provided.

Phase 1 - Steady State
- Normal peacetime operations.
- IT: Personnel administration, readiness and training, IA, logistics sustainment, and ability to surge.

Phase 2 - Surge to one MTW based on a geopolitical event
- Event triggers military course of action and heightened activity, e.g., surge in communications, mobilization, operations, intel, logistics, medical, etc.
- IT: Surge in Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) activity, voice, video and data, preposition of materiel, mobilization and movement of personnel.

Phase 3 - Heightened Operations at one MTW
- Forces are pre-positioned for commitment, i.e., unit training, continued logistics build-up, completion of reserve forces build-up, back-fill of other forces, and sustained intelligence analysis on the AOR.
- IT: Personnel administration, readiness and training activities, IA, logistics sustainment, collaborative planning for tactical operations, increased attacks on network systems.

Phase 4 - Surge to two MTWs based on second geopolitical event
- Maintaining phase 2 levels, an additional surge adds stress in new region, full mobilization, potential draft, accelerated acquisition, round-the-clock training.
- IT: Same impacts as phase 2 but in a separate geographic area; all IT infrastructure experience increased stress; expanded user base and locations.

Phase 5 - Sustained operation at two MTWs
- Forces are engaged in actions in two geographic regions; i.e., IW attacks, prioritized communications (bandwidth allocation).
- IT: Reliability of IT service is greatly increased for mission critical systems; there is increased use of the classified network; increased restrictions are placed on access, there may be government intervention in network management; there may be controls and restrictions on NMCI physical structure.

Phase 6 - Completion of contingency operations or hostilities
- Active forces are repositioned, reserve forces are demobilized, unused materiel is repositioned, repair of equipment, replenishment.
- IT: Transfer of Command and Control; logistics, administrative, and personnel support are predominant functions; de-scoping of user accounts; restoration of steady state levels of service.

Phase 7 - Steady State
- Return to normal peacetime operations.
- IT: Personnel administration, readiness and training activities, IA, logistics sustainment, and ability to surge.

2.4 OPERATIONAL AND FUNCTIONAL LEVEL SCENARIOS

A more detailed view of the operational/functional areas within DoN provides an increased understanding of the IT infrastructure impacts during the seven Op Tempo phases of the Navy and Marine Corps Operational Tempo Profile (Figure 67). By looking not at organizational entities or commands, but by examining the operational and functional types of activities that must be performed in organizations, a comprehensive set of DoN activities is approximated that indicates the range of activities that must be performed across the enterprise. Each of these activities presents a different set of requirements for the IT infrastructure. These activities and supporting IT requirements are examined in each of the seven phases of the Navy and Marine Corps Scenario and presented and explained in a consistent set of graphical and narrative descriptors – User Profiles. (Figure 8)

Operational/Functional
Areas
• Operational
• Logistics
• Personnel
• Training
• Acquisition
• Medical
• Base Operating Support

User Profiles and Narrative
• Graphic Profile
• Functional Description
• Activities at Specific Operation Phase
• Specific IT Support
• Supported Systems
• Geographic Information

Op Tempo Phases
• Steady State
• 1 MTW
• 2 MTW
• Re-deployment
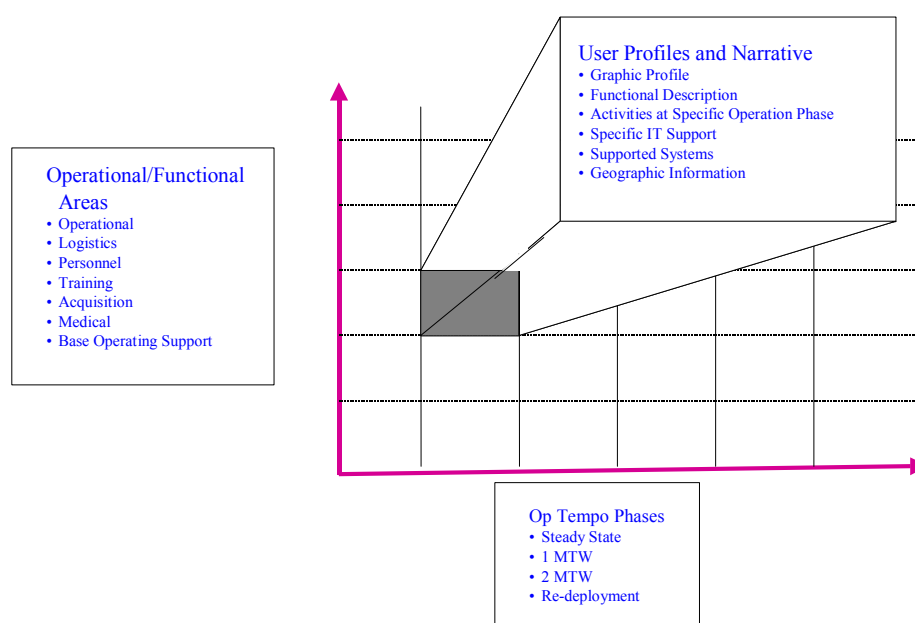
Figure 8. Dimensions of the Network User Profile.

NMCI Stakeholders approved a set of basic and optional IT services that NMCI will provide to DoN users. These are organized into a more traditional group of services for the purposes of this analysis. The DRM provides a description of the qualitative impact that each operational/functional area, shown in Figure 8, will have on NMCI services as Naval forces respond to a two MTW contingency. Each operational and functional area provides a separate assessment of the relative stress their activities will have on individual NMCI services during each of the seven phases considered beginning in phase 1 (peacetime steady state) and proceeding through the contingency phases of 2 through 7. Initial stress is indicated using defined criteria for phase 1 stress and another criteria for phases 2-7 stresses. This by-phase functional impact assessment is accompanied by narratives that describe the steady state environment for each functional area, and incremental changes to both operational and functional activity as well as supporting NMCI services that are required during the two MTW scenarios.

Phase 1 (Steady State): Each of the seven phases of the Operational Tempo Profile has a distinctly different impact on the IT infrastructure. For Operational Profile phase 1 (Steady State), each of the operational and functional areas can be described in terms of Service Level Indicators (SLIs) 1 through 3, as presented in Table 2. NOTE: THIS APPLIES TO PHASE 1 ONLY. The higher the number, the greater general stress is placed upon NMCI services during steady state operations. Representatives from the Operational/Functional areas completing the DRM assessment of phase one considered the three categories and chose the one that best reflects their typical user population stress on the NMCI, that is, a 1, 2, or 3. This steady state (phase one) assessment serves as a baseline against which operational/functional impacts on the aggregate NMCI services are reported. An "Other" category was provided in the SLI Steady State determination matrix for additional significant service(s) that the particular operational/functional area might expect to significantly impact NMCI. For this assessment, a description of the IT services approved by the DoN IT Stakeholders is provided in chapter 1.

☐ Help Desk 8X5 operation ☐ High percentage of COTs applications ☐ Low number of document transfers ☐ Little functional use of multimedia ☐ Highly stable user environment, few mobile users ☐ No VTC ☐ Little or no database administration ☐ Little or no classified users ☐ Other	1
☐ Help Desk 8X5 operation with some surge / after hours ☐ Moderate number of legacy applications, some COTS ☐ Moderate number of document transfers ☐ Moderate functional use of multimedia ☐ Moderate number of user adds and drops, moderate mobile users ☐ Moderate VTC ☐ Some database administration ☐ Moderate number of classified users ☐ Other	2
☐ Help Desk 24X7 operation ☐ Heavy use of legacy applications ☐ Heavy document transfer ☐ Heavy functional use of multimedia ☐ High number of user adds and drops, mobile users ☐ Heavy VTC ☐ Heavy user of database administration ☐ High number of classified users ☐ Other	3

Table 2 Service Level Indicator (SLI) - Steady State Determination

Phases 2 to 7: For Operational Profile phases 2 through 7, the entering baseline is the value for phase 1 that was determined in the steady state analysis. As the Navy and Marine Corps surge in phase 2 to one MTW, the effect on the operational/functional area is described. The chart in Table 3 was used as a tool for phases 2 through 7 to assess impact on NMCI services. The list of 13 services used in the DRM provides a roll up of the 46 Stakeholder Services to enable a more defined, traditional, and focused look at the service areas, especially those judged to be high stress. If there is an overall "significant" increase in service impact, then the phase 1, or steady state value was raised by a value of +1 for that service, if there was a "very significant" increase, the value may be raised by +2. (No change is indicated by a 0) There were a number of instances where the use of a particular NMCI service actually decreased when moving from one phase to the next; the same approach is used (indicating a –1 or –2 for "significant" or "very significant" changes). A change in any phase is relative to the phase preceding it, providing a profile for that service across all seven phases.

Network Services	Phase 1 Peacetime Ops	Phase 2 Deploy MTW1	Phase 3 Employ MTW1	Phase 4 Deploy MTW2	Phase 5 Employ MTW1/2	Phase 6 Redeployment	Phase 7 Peacetime Ops
Security Services: firewalls, intrusion detection, availability, encryption.	Steady State						
Wide Area Network Connectivity: Access to DISN (SIPRNET & NIPRNET); commercial WAN; Internet. Includes capacity, functionality, and assurance.	Steady State						
Base Area and Local Area Network Services: Voice, video and data; End-user to WAN POP; Assumes classified and unclassified; Includes availability, capacity, functionality, and assurance.	Steady State						
Desktop Hardware and Software: Provisioning / relocating of end user desktop suites.	Steady State						
Help Desk and Technical Support: Touch labor & support to users.	Steady State						
Enterprise Network Management: Includes perf mngt, directory, DNS, connectivity or accounts (adds/moves/ deletes), VPN spt, sys integration, config mngt, capacity planning; class and unclass.	Steady State						
Organizational Messaging: AUTODIN & DMS	Steady State						
Email: Capacity, availability, classified and unclassified.	Steady State						
Web Services: Web enabled applications hosting; search engines; news group services; web site hosting.	Steady State						
Remote Telephone Access	Steady State						
Video-teleconferencing: Including capacity, availability, management and set up of sessions.	Steady State						
Telephony: Switched voice, voice over data, cellular service, pagers.	Steady State						
Training: System administrator, end user training.	Steady State						
Weighted Average of Impact on NMCI Services. First cell is Steady State SLI.							

Table 3 NMCI Services Impact Worksheet

Operational/Functional Area Profile is shown in Figure 9**.** Each of the seven columns represents the stress that a given functional area will have on the aggregate NMCI services during that phase of this notional scenario. Phase 1 reflects the baseline value determined by the operational/functional experts as their steady state service level indicator. Phases 2 – 7 reflect a weighted average of functional stress on the aggregate NMCI services based on functional input recorded in the table above. In determining the by-phase weighted average, Security Services, Wide Area Network Connectivity, Base Area and Local Area Network Services, Enterprise Network Management and Video Teleconferencing were weighted "2", Help Desk was weighted "3", and all other services "1." The following formula was used to calculate the stress on all NMCI services for a functional area at each phase of this notional scenario:

$$stress_{fp} = \sum_{s=1}^{13} w_s stress_{fsp} / \sum_{s=1}^{13} w_s$$

Where $STRESS_{fp}$ = stress for operational/functional area f at operational tempo phase p,

w_s = weight of service s.

The resultant curve derived for each operational/functional area reflects that area's tendencies to place demands or stresses on NMCI. The resultant curve approximates the profile for IT services as illustrated in the example in Figure 9Figure 9 which graphs the resultant Service Level Index (SLI) verses the phase of operation.
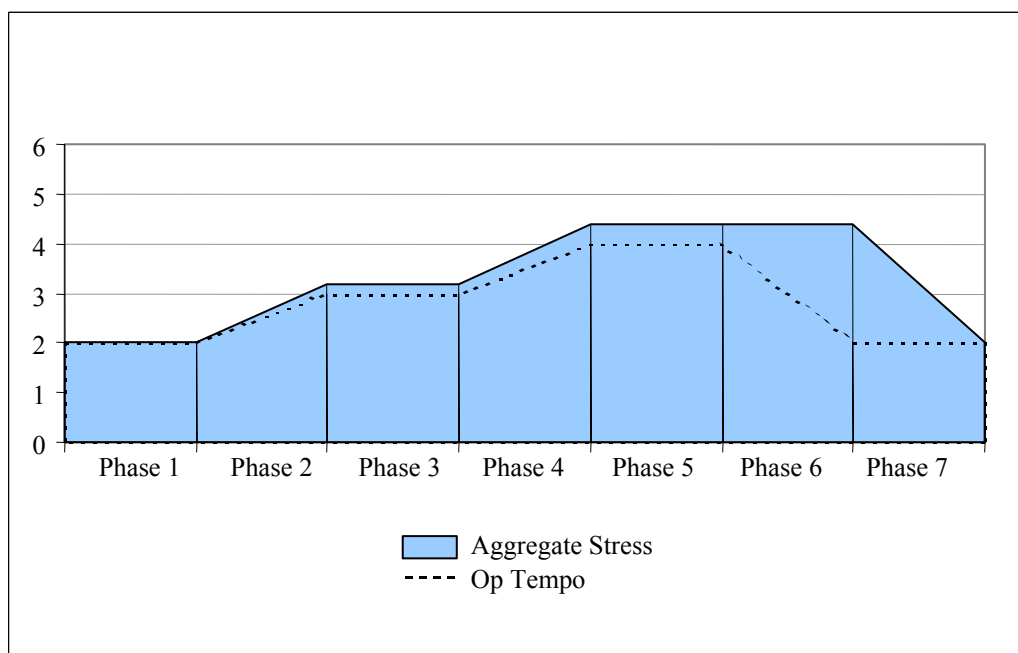
Figure 9. Typical Operational/Functional Stress Representation –Operational

Narrative Descriptions. The most notable service demands and stresses determined in the development of service impact profiles require explanation in the accompanying narrative description. These descriptions are not intended to be comprehensive, but to emphasize unique requirements, mission essential areas, dramatic changes, and notable challenges. The focus is on those things that have a significant IT impact (e.g., help desk must be available 24X7 during phase 3). Those impact areas identified in the narrative section are accompanied by identification of and links to specific MOEs that are to be used for these areas.

The actual format of the narrative was repeated for each operational/functional area for both the Navy and Marine Corps. The format provides to the prospective service provider, a description of the operational/functional area itself, its role at the particular operational profile phase, and its general requirements for IT. The narrative describing Steady State (phase 1) is the most descriptive. Subsequent narratives (phases 2 to 7) describe only the differences or changes and support those impacts recorded on the Services Impact Worksheet (Table 3). The following format was used by each of the operational/functional areas to describe each of the seven phases of the DRM scenario:

    a.   Functional Description. Provides a general description of what the function is/does.

    b.   Activities at Specific Operation Phase. Maps the functional activities to this specific operational tempo phase, e.g., phase 2.

    c.   Specific IT Support. Provides the manner in which IT supports the function at this phase. More detail is provided at phase 1 (steady state). At each subsequent phase, only the particular concerns regarding IT at that phase are provided. The IT emphasis areas are tied to MOEs. Those stress areas that are deemed to be most important are explained, along with their particular MOEs.

    d.   Supported Systems. Describes the major enterprise mission critical functional systems (approximate number and top 5). This includes legacy systems that are considered to have potential to impact the NMCI (e.g., is installed and used throughout Navy or Marine Corps, or is distributed on local- or wide-area networks in a client-server or mainframe host architecture). For major systems, "intensity" of system use and associated stress on NMCI is described (e.g., large graphics, imagery or video files, large database files, daily use on geographic scale).

    e.   Geographic Information. Provides CONUS and Hawaii geographical concentrations that perform this function or are specific to a particular requirement. (e.g. Level of granularity is the level of a Jacksonville, Cherry Point, Tidewater, San Diego, Camp Pendleton)

2.5 DRM PHASES 1 THROUGH 7 NOTIONAL PRESENTATIONS

The product of each operational/functional area in chapter 3 is as follows: Phase 1 will include the established baseline SLI and narrative description of that function at steady state. Phases 2 through 7 will include data from the Service Impact Worksheet and narrative appropriate to each phase. A key product of each operational/functional area analysis will be a summary profile similar to the Figure 10, as well as selected individual profiles for specific services (such as help desk). In a separate analysis in chapter 4 the set of operational/functional summary profiles will then be used to compute the approximate stress (Service Level Index (SLI)) in major geographical areas by applying the collection of operational/functional activities according to the demographics of the area.
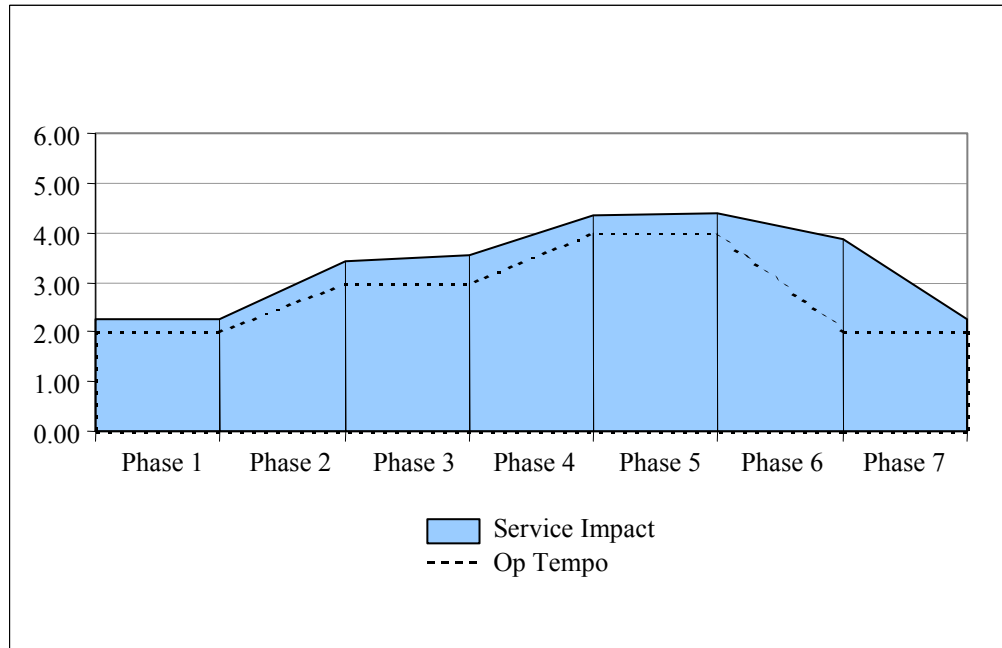
Figure 10 Summary Operational/Functional Stress Representation

2.6 GEOGRAPHIC ACTIVITY PROFILES

The operational/functional area activity profiles provide a means to approximate the demand or stress on NMCI in a particular geographic area or region. The Navy and Marine Corps user populations and demographics (by operational/functional area) were obtained for five high-density geographic areas. By applying the user profiles to these corresponding population distributions, a set of generalized geographic user profiles was derived. This characterizes the approximate stress on NMCI for each area. These general profiles are also broken down by selected specific network services (e.g., help desk, video-teleconferencing) to provide more specific tendencies and an indication of areas that may require focused attention during " due diligence."

$$stress_{gp} = \sum_{f=1}^{15} stress_{fp} \, geopop_f$$

Where: $geopop_f$ is the number of NMCI users at a given location in functional area f;

$stress_{fp}$ is the stress placed on all NMCI services during phase p for functional area f;

$stress_{gp}$ is aggregate stress on all NMCI services at a given location g during phase p.

The above formula was used to calculate the stress of all NMCI services for a given geographic location based on user demographics (15 Navy/Marine Corps operational/functional areas). The example of Help Desk at San Diego/Camp Pendleton is provided in Figure 11.
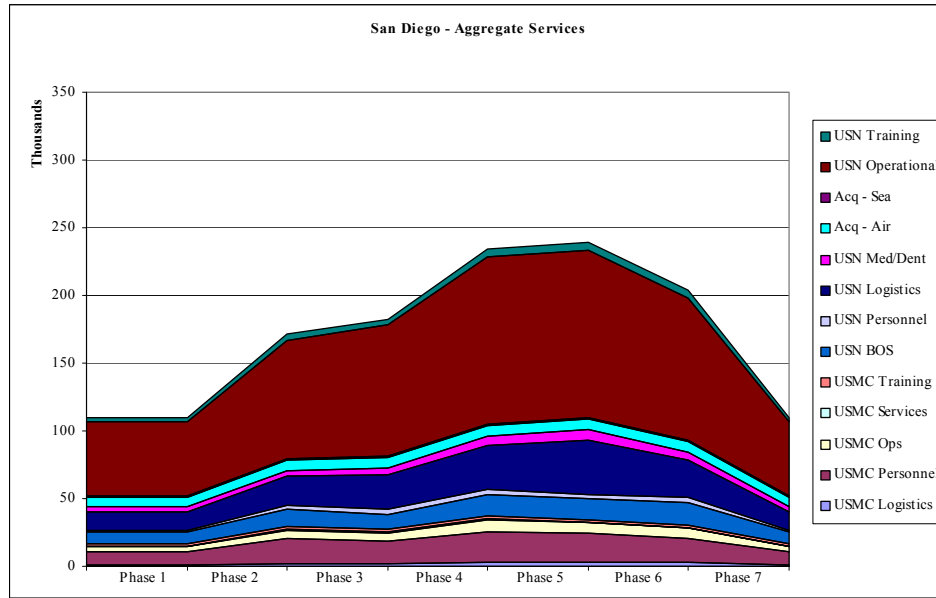
Figure 11. San Diego/Camp Pendleton Area User Profile

3 OPERATIONAL/FUNCTIONAL AREA DESCRIPTIONS AND USER PROFILES

As described in chapter 2, the following is a series of 15 operational and functional area descriptions and user profiles. The first nine are Navy, the remaining six are Marine Corps. They are as follows:

3.1 Operational / Tactical – Navy

3.2 Operational / Tactical – METOC

3.3 Manpower and Personnel – Navy

3.4 Logistics and Infrastructure – Navy

3.5 Training and Education – Navy

3.6 Base Operating Support – Navy

3.7 Medical and Dental – Navy

3.8 Acquisition – NAVSEA

3.9 Acquisition – NAVAIR

3.10 Operational /Tactical – Marine Corps

3.11 Manpower and Personnel – Marine Corps

3.12 Logistics – Marine Corps

3.13 Training and Education – Marine Corps

3.14 Services – Marine Corps

3.15 Acquisition – Marine Corps

3.1 OPERATIONAL/TACTICAL - NAVY

Operational/Tactical is one of the seven operational/functional activity areas used in the DRM to describe how the Navy performs its mission. The intent of this section is to provide a brief overview of the mission, people, and locations that relate to this function, leading to the real objective - a description of the IT infrastructure that must be in place to support it. The elements of the IT description will characterize how the work activities of this function place demands or stress on the IT infrastructure (NMCI) during a hypothetical set of potential environments in which the Navy must be prepared to operate, as described in chapter 2. The graph in Figure 12 is provided as a way of introduction, showing the notional stress that Operational/Tactical could be expected to place on NMCI during peacetime and during increases in operational tempo. The following provides the supporting detail.
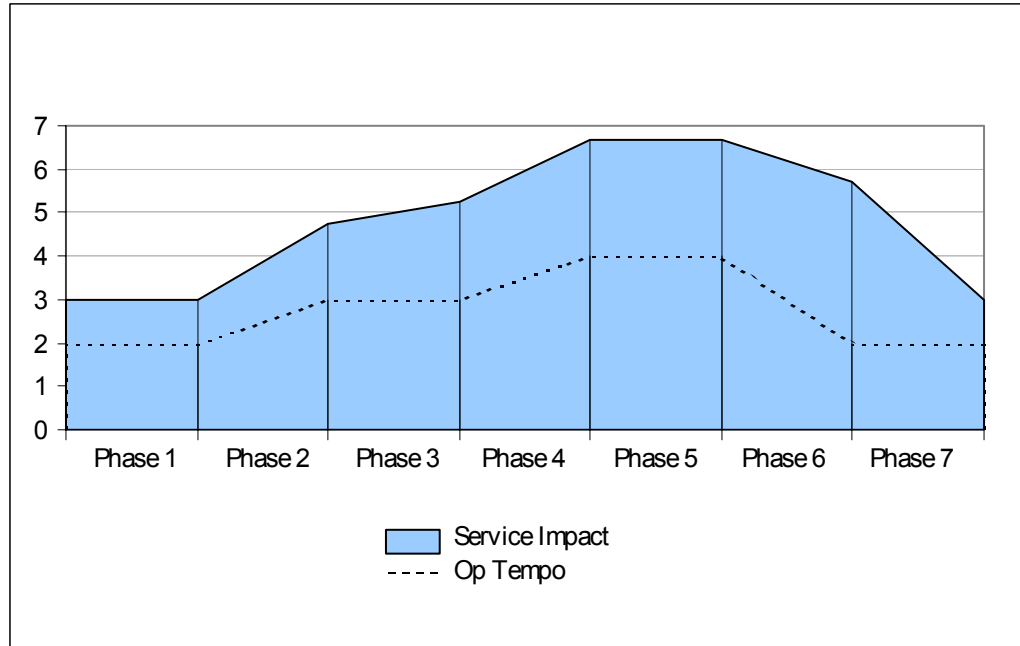
Figure 12. Operational/Tactical Impact on NMCI Services

3.1.1 Functional Description

Naval (Navy and Marine Corps) operating forces deploy from CONUS and Hawaii bases to provide sustained forward presence overseas, to rapidly respond to international crises and natural disasters. When not forward deployed, Naval operating forces are supported by fleet concentration areas (Norfolk, Mayport/Jacksonville, San Diego, Pearl Harbor, and Puget Sound).

Naval operating forces include Navy surface ships and Military Sealift Command ships, submarines, aircraft, Seabee battalions, seal teams, and embarked fleet/battle group/squadron staffs. Operational forces also include deploying detachments of intelligence, cryptology, meteorology/oceanography, and other support elements. The approximate distribution of operational forces in CONUS and Hawaii is shown in Table 4.

	Navy Units	Navy Personnel
Atlantic Fleet (CONUS)	921	206,801
Pacific Fleet (CONUS)	751	154,570
Pacific Fleet (Hawaii)	186	23,924

Table 4 Navy Operational Forces in CONUS and Hawaii

Generally, there are five Battle Groups (BG) and five Amphibious Ready Groups (ARG) in each of the Fleets; the BGs each include approximately 10 units and the Ambitious Readiness Groups (ARGs) include three units. During peacetime, approximately one-third of these operating forces are forward deployed at any given time (steady state). Another one-third is out of homeport/garrison conducting training, exercises, and counter-narcotics operations. The remainder of the fleet is normally in homeport. Unless Naval forces are in an extended maintenance availability, they are required to be able to deploy on short notice. Naval forces routinely participate in joint exercises and operations, and must be able to operate with Army and Air Force units.

Naval forces also routinely operate with coalition forces, and operate with and support other U.S. agencies. Naval forces support Department of Transportation/Coast Guard and Department of Justice counter-narcotics efforts. Organizations such as ONI and Commander, Naval Security Group (COMNAVSECGRU) routinely interact with Department of State, National Security Agency (NSA), and Central Intelligence Agency (CIA). Some Naval forces, e.g., TACAMO, are based at non- U.S. Navy bases in CONUS.

The Naval operating forces are directed by and supported by shore-based headquarters in the fleet concentration areas and the Washington DC area. These headquarters include CJCS, Unified Commanders, CNO, Fleet Commanders, Military Sealift Command, and Type Commanders. Additionally, the Office of Naval Intelligence and Naval Security Group Command support Naval intelligence and crypto logic operations from their headquarters, joint intelligence centers, and Naval Security Group activities.

3.1.2   Operational Activities at Phases 1-7

During Peace time (Steady State) operation, Naval Operational/Tactical commands are conducting training, readiness, and operations. These activities are planned, repetitive, highly cross-functional (command and control, logistics, training, intelligence, and meteorology/ oceanography). The communications requirement is robust, steady, highly distributed, time-critical, outcome driven, and readiness related.

During a surge to one Major Theater War (MTW), generally one-half of the fleet will be deployed to respond to the crisis and one-half will be in CONUS/Hawaii.

- At the outbreak of hostilities, demands on CONUS communication infrastructure and services will realize a sharp increase as Naval operating forces exchange voice, video and data with CONUS-based headquarters and intelligence/cryptographic activities.

- Headquarters and CONUS staffs will increase transmission of Tasking Orders, OPTASKS, and Air Tasking Orders (ATO) to the operating forces. Deployed Operational Commanders will increase transmission of Situation Reports, Operational Summaries, and other reports to headquarters and CONUS staffs.

- Intelligence and cryptology activities will increase, such as video transmissions as Bomb Damage Assessment requirements are added to pre-hostility imaging requirements.

- As the number of forces forward deployed increases, collaborative application usage between shore sites and between CONUS shore and deployed sites will increase.

- CONUS-based activities that are already in 24X7 operations may increase their 24X7 staffing, and activities that had not previously gone from 8X5 to 24X7 operations may shift at the outbreak of hostilities.

- Real-world wartime operations will necessitate an increased security posture.

During a surge to two MTW, generally 90 percent of the fleet will be deployed to respond to the crisis and the remainder will remain in port; wartime support activities will proportionally increase, to include mobilization and augmentation.

- At the outbreak of hostilities, demands on CONUS communication infrastructure and services will realize a sharp increase as Naval operating forces exchange voice, video and data with CONUS-based headquarters and intelligence/cryptographic activities.

- Headquarters and CONUS staffs will again increase transmission of Operational Orders (OPORDERS), Operational Tasks (OPTASKS), and ATOs to the operating forces. Operating forces will increase transmission of Situation Reports, and other reports to headquarters and CONUS staffs.

- Additional CONUS-based activities may increase their 24X7 staffing, and additional activities may go to 24X7 operations.

- Operational forces will be augmented with an infusion of personnel, both from shore support commands and from mobilized reserve forces. Ships and aircraft will deploy with a higher number of embarked staffs and functional support detachments (intelligence, cryptology, meteorology, PAO, etc.).

- Headquarters and shore-based staffs will receive plus-ups of personnel to support increased requirements of wartime operations, command and control, and intelligence.

- New units/activities/elements may be created at CONUS shore bases, requiring new installations and training support.

Redeployment of forces from the MTW theater will witness a similar early sharp increase in exchange of voice, video and data with CONUS headquarters and staffs. This will likely be sustained for a matter of weeks and months until redeployment actions are completed with the return of people and material to garrison in CONUS. The challenges and activities involved in recovering and returning assets and resources require the same, if not greater, levels of activity and communication.

3.1.3 Specific IT Support

When in port or in garrison, shore based Naval operating forces derive their IT support from NMCI. When out of port or garrison, Naval operating forces are supported by tactical and strategic systems such as Satellite Communications gateways (Teleports) at the Naval Computer and Telecommunications Area Master Stations (NCTAMS). The NCTAMS and other gateways connect the ships and other deployed forces with NMCI. Naval forces are direct customers of NMCI when in port/garrison, and are indirect customers of the NMCI, through NCTAMS, when operating out of port/garrison.

During surges to one and two MTW, where Naval forces are required to respond to a crisis, or to mobilize and deploy in support of national war plans, the NMCI will be stressed by a variety of factors:

a) As naval forces deploy in response to one and two MTWs, IT support requirements at the piers, air stations and SEABEE/SEAL/USMC Garrisons will decrease. Simultaneously, increased demands in IT support to headquarters, shore staff, materiel and maintenance commands and intelligence/crypto logic establishments will result. The network must support these increased requirements as well as the communications links to deployed forces through NCTAMS and other gateways.

b) As shore commands are augmented with mobilized reserve forces, circuit loading will increase as use of voice, video, and data services increase, and there will be demands for additional bandwidth at key headquarters, intelligence, and cryptology sites. Some communications such as meteorology will require priority, low latency, and reliable transmissions. Critical Video Tele-Conference VTC/imagery/command and control information must be able to be transported within the NMCI.

c) CONUS operational shore based organizations not already at 24X7 operations will in many cases migrate to 24X7 operations. Demand for remote and mobile IT services will dramatically increase as CONUS shore-based organizations send liaison elements forward.

d) The IT enabling capabilities of the NMCI will include support for distributed computing, enterprise legacy databases, virtual data warehouses, transaction processing, decision support tools, and asset tracking. These capabilities will seamlessly link to other networks including the Defense Information Switch Network (DISN), STEP sites, and DoD enterprise databases. In fact, NMCI will extend voice, video, and data services from Defense Information Security Agency (DISA's) NIPRNET and SIPRNET to the Naval operational/tactical/intelligence units afloat and ashore in CONUS and Hawaii, and will support hosting of operational/tactical/ intelligence applications (such as Defense Messaging System and GCCS-M).

e) Degradation of services, e.g. email, Domain Name Services (DNS), or web applications, during times of heightened hostilities, cannot be tolerated.   Causes of degraded service include:

   a. Malicious Code. NMCI should be able to effectively detect, isolate, and clean viruses from email and other transferred files; search for and clean viruses from stored flies and archived email; contain viruses at infected sites and preclude spreading viruses to and from different segments of NMCI.

Once identified, Trojan Horse eradication must be accomplished quickly and efficiently across the enterprise so that the problems do not cascade.

    b.   Denial of (information exchange) Service Disk Operating System (DOS) to command ships and shore based command and control sites cannot be tolerated. The identification, determination of the cause, and reaction to recover from the DOS conditon must be done in a minimal time.

    c.   Network systems (e.g., workstations and servers) and protective security devices (e.g., firewalls and Intrusion Detection Systems (IDS)) must be properly configured to preclude intrusion/unauthorized access into NMCI networks, systems, files and data. As new vulnerabilities are identified these systems must be promptly updated and/or reconfigured to eliminate new vulnerabilities. Vulnerability assessments must be conducted regularly to detect misconfiguration of networked systems.

Redundent connections/servers/services are required at primary points of presence to Wide Area Network (WAN) services.

The top six services (Security, Enterprise Network Management, Help Desk, Wide Area Network Connectivity, Base Area and LAN Services, and Video Teleconferencing) are displayed based upon their Services Impact evaluation performed by stakeholders. The graphical representations are shown in Figure 13. The supporting data is provided in Table 56 . The stress on the NMCI occurs during one and two MTW for all services, in fact, Operational, along with Logistics, exhibited the most pronounced stress across the seven phases.
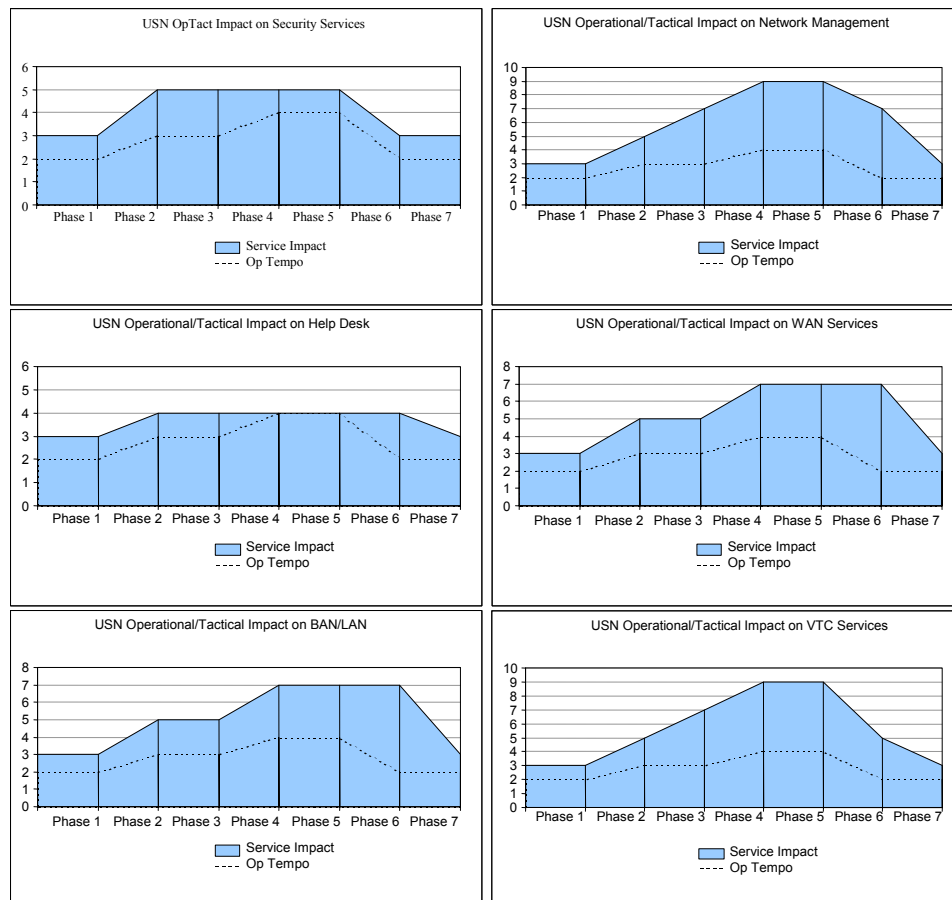
Figure 13. Individual Service Impacts for Operational/Tactical

The operational/functional IT managers estimated stress data for the list of 13 NMCI services introduced in chapter

2. The data includes the six graphically depicted services above plus seven others. The complete set of data is presented in the NMCI Services Impact Worksheet below.

USN Op/Tactical

Network Services	Phase 1 Peacetime Ops	Phase 2 Deploy MTW1	Phase 3 Employ MTW1	Phase 4 Deploy MTW2	Phase 5 Employ MTW1/2	Phase 6 Redeployment	Phase 7 Peacetime Ops
Security Services: firewalls, intrusion detection, availability, encryption.	Steady State	+2	0	0	0	-2	0
Wide Area Network Connectivity: Access to DISN (SIPRNET & NIPRNET); commercial WAN; Internet. Includes capacity, functionality, and assurance.	Steady State	+2	0	+2	0	0	-4
Base Area and Local Area Network Services: Voice, video and data; End-user to WAN POP; Assumes classified and unclassified; Includes availability, capacity, functionality, and assurance.	Steady State	+2	0	+2	0	0	-4
Desktop Hardware and Software: Provisioning / relocating of end user desktop suites.	Steady State	+1	0	+2	0	0	-3
Help Desk and Technical Support: Touch labor & support to users.	Steady State	+1	0	0	0	0	-1
Enterprise Network Management: Includes perf mngt, directory, DNS, connectivity or accounts (adds/moves/ deletes), VPN spt, sys integration, config mngt, capacity planning; class and unclass.	Steady State	+2	+2	+2	0	-2	-4
Organizational Messaging: AUTODIN & DMS	Steady State	+2	0	+2	0	0	-4
Email: Capacity, availability, classified and unclassified.	Steady State	+2	0	+2	0	0	-4
Web Services: Web enabled applications hosting; search engines; news group services; web site hosting.	Steady State	+2	0	+2	0	0	-4
Remote Telephone Access	Steady State	+2	0	+1	0	-2	-1
Video-teleconferencing: Including capacity, availability, management and set up of sessions.	Steady State	+2	+2	+2	0	-4	-2
Telephony: Switched voice, voice over data, cellular service, pagers.	Steady State	+2	+2	+2	0	0	-6
Training: System administrator, end user training.	Steady State	+1	0	+2	0	-2	-1
Weighted Average of Impact on NMCI Services. First cell is Steady State SLI.	3.00	4.75	5.25	6.70	6.70	5.70	3.00

Table 56 USN Operational/Tactical

The Operational/Tactical area mission requirements described above, during steady state and through the phases of MTW, have varying priorities as determined by the command authority. The IT services that support these mission requirements similarly have priorities that closely mirror the mission priorities. Those priorities must be reflected in the performance measures by which the service provider solutions are evaluated and by which the ultimate NMCI service is measured. The Operation/Tactical functional area has identified the following priorities along with their corresponding measures of effectiveness as presented in Table 7.

Priority	Required IT Services	Performance Measures
1	Ability to restore connections, measure degradation	Availability (Ao), Mean Time to Restore (MTTR)
2	Protection from virus attacks	Time to detect virus, time to respond to virus, time to eradicate virus, % loss of messages, time to restore infected messages
3	Maintenance of full operational capability	Time to detect and react, to denial of service (DoS) attack, time to restore integrity of system
4	Intrustion detection	Time to detect intrusion, time to react to intrusion, time to restore routers, effectiveness in eradicating trojan horse

Table 7 Operational IT Perfortmance Measures

3.1.4   Supported Systems.

There are approximately 30 major Command and Control and operational support enterprise systems that support fleet tactical operations. The predominant systems in use are listed in Table 8. It should be recognized that in the Operational and Tactical activity, as well as the other functional activities, there are more than 400 total programs of record that must be considered and supported under NMCI. A brief description of selected major Operational/Tactical systems is provided.

Planning / C2	Operational Support	Intelligence	Environmental
GCCS/JMCIS	NALCOMIS	JWICS Video	TESS (3)
JOPES	GCSS/NTCSS	JWICS Data	NITES
CTAPS	SNAP	JSIPS	
TBMCS	SALTS	JTAGS	Messaging
TAMPS	MRMS	JATACS	DMS
JMPS	Global Transportation	NIBS	
APS	NSIPS	OBU/OED	Collaboration
SOCRATES			VTC
COMPASS			

Table 8 Predominant Operational Enterprise Systems

The Global Command and Control System-Maritime (GCCS-M) System is composed of three components, GCCS-M Afloat, GCCS-M Ashore, and GCCS-M Tactical/Mobile.

- GCCS-M Afloat is the Navy's command and control system and is compliant with the Joint Services Global Command and Control System (GCCS). GCCS-M includes migration to DISA's Defense Information Infrastructure (DII) Common Operating Environment (COE), incorporation of Fleet requirements for merging tactical and non-tactical networks, support for the IT-21 / Network Centric Warfare initiative and utilization of Personal Computer (PC), WEB and other Commercial-Off-The-Shelf (COTS) Information Technology.

- Provides Tactical Command, Control, Communication, Intelligence (C3I) systems tailored to meet platform missions and functions to ensure joint interoperability among operational commanders/platforms.

- Provides both General Service (GENSER) and Sensitive Compartmented Information (SCI) source information management systems which receive, process, correlate, fuse, assess, and display the readiness and disposition of own, neutral, and potentially hostile forces

- Provides tactical commanders with an accurate, reliable and survivable Common Operational Picture (COP)

- Consists of the following: (1) Force Level system is the core battle group/force commander's warfighting system. It is located on force level combatants (i.e., Carrier (CV)/CVN, LCC, LHA, LHD, MCS and AGF) and is centrally located in the flag command and control spaces. It consists of both UNIX and NT servers and workstations, color large screen displays, remote displays and video switches running on an IT-21 LAN. (2) Unit Level system is the tactical C3I system for the BG / Ambitious Readiness Group (ARG) Unit Level warfighting combatants. It is located in shipboard command and control spaces located on unit level ships and submarines (i.e., AO/AOE/AE/ARS, CG, DD/DDG, FFG, MHC/MCM, LPD/LSD/LST and SSN/SSBN). (3) Shipboard Video Distribution System provides Force Level ships the ability to route video signals (up to 96 inputs and 96 outputs) throughout selected areas of the ship. This system provides routing for various workstation videos into command decision spaces.

- GCCS-M Ashore provides C4I systems and equipment upgrades to support the Fleet Commanders worldwide. The services provide a single system to process unit characteristics, employment scheduling, material condition, combat readiness, warfighting capabilities, positional information and disposition of own and Allied forces. GCCS-M Ashore provides geolocational information on hostile land; sea and air forces integrated with environmental and other nationally derived information. It provides the tools necessary for operational commanders to execute plans, and to transmit tasking and tactical information to forces. Hardware suites to support GCCS-M Ashore follow an iterative hardware and software release along with IT-21 compatible client/server design implementing LAN and WAN architecture, serial and parallel processors, communications and database servers. GCCS-M Ashore also offers distributed briefing capabilities among commands using video and large screen displays. Integrated Shipboard Network System (ISNS) provides basic services including SIPRNET and NIPRNET, email, web browsing, and MS Netmeeting, which is being used in the fleet to support distributed collaborative planning.

- GCCS-M Tactical/Mobile provides evolutionary systems and equipment upgrades to support the Fleet Commanders with the capability to plan, direct and control the tactical operations of Joint and Naval Expeditionary Forces and other assigned units within their respective area of responsibility. These operations include littoral, open ocean, and over land all sensor (i.e. Electro Optical (EO), Infra-Red (IR), Inverse Synthetic Aperture Radar (ISAR), etc.) surveillance, anti-surface warfare, over-the-horizon targeting, counter-drug operations, power projection, antisubmarine warfare, mining, search and rescue, and special operations. GCCS-M Tactical/Mobile Systems include fixed site Tactical Support Centers (TSCs) and mobile components, which are the Mobile Operations Control Centers (MOCCs), Mobile Ashore Support Terminals (MASTs) and Mobile Integrated Command Facilities (MICFACs). The MAST/MICFAC generally deploy to support either a commander joint task force, or the Naval component commander of the joint task force. MICFACS (and the upgraded MAST) will access the SIPRNET and NIPRNET via teleports. The Command and Control services provided include analysis and correlation of diverse sensor information; data management support, command decision aids; access to rapid data communication, mission planning and evaluation; dissemination of ocean surveillance positional data and threat alerts to operational users ashore and afloat.

Contingency Theater Automated Planning Systems (CTAPS) is the current system that is used by the Joint Services to produce, generate, disseminate and monitor execution of the air tasking order (ATO). Theater Battle Management Core Systems (TBMCS) is the replacement for CTAPS. TBMCS is a suite of 14 joint standard software applications, which provide U.S. forces with the ability to plan and control operations, including air and

space control and air and missile defense.

TBMCS Host systems are installed on force level combatants (CV/CVN, LCC, AGF). TBMCS Remote systems are installed on LHA, LHD and MCS classes. The TBMCS Shore Site systems include training sites, the Software Support Activity (SSA), and the In-Service Engineering Activity (ISEA). Shore site initial installations and upgrades are required to support the TBMCS software releases.

Ocean Surveillance Information System is OSIS. The OSIS Baseline Upgrade is OBU. OSIS Baseline Upgrade Evolutionary Development (OED) provides systems and equipment upgrades to support three Joint Intelligence Centers (JIC), one JIC Detachment, one Training Center and one Software Support Activity. OED provides analysis of multi-source intelligence to produce reports of foreign forces and potential hostile activity. It also provides near-real-time all-source fusion, correlation and analysis tools, directly feeding automated reporting capabilities. This data is disseminated to the operating forces for tactical threat warnings, decision making support, and support of Over-the-Horizon-Targeting. Operational control of the forces during times of crisis will most likely be under warfighting CINC (PACOM, EUCOM, CENTCOM, SOUTHCOM, CINCUK). This will mandate that NMCI be seamlessly interoperable with Joint C4I systems and must support their requirements. Navy components are not operational commanders but rather supporting CINCs. The role of the Navy shore establishment in crisis is to provide and support forces to the warfighters.

The Naval Tactical Command Support System (NTCSS) provides standard tactical support information systems to afloat and shore-based fleet activities, for management of information, personnel, material and funds required to maintain and operate ships, submarines, and aircraft. Its component subsystems are major users of the NMCI and include the following: Shipboard Non-Tactical Automated Data Processing (ADP) Program (SNAP) systems, the Naval Aviation Logistics Command Management Information System (NALCOMIS), and the Maintenance Resource Management System (MRMS).

- Shipboard Non-Tactical ADP Program (SNAP) is an automated information system that supports organizational level maintenance, supply, financial and administrative functions on afloat units, at Marine Air Logistics Systems (MALS) and at associated shore activities. NAP improves equipment readiness through improvements in maintenance, supply, financial and related support data maintained and reported by the ship. The scope of SNAP includes approximately 300 sites.

- Naval Aviation Logistics Command Management Information System (NALCOMIS) is an automated, real time, interactive, management information system that provides a management tool for day-to-day management of aircraft maintenance, automating management of the aviation repairable inventory, providing nose-to-tail tracking through the repair and operations cycles. The scope of NALCOMIS includes 66 aviation intermediate maintenance activities located afloat (CV/LHA/LHD/MALS), at Naval Air Stations (NASs), and approximately 326 Navy and Marine Squadrons.

- Maintenance Resource Management System (MRMS) is an automated information system that supports ship intermediate maintenance management of the Atlantic and Pacific Fleets. MRMS supports Type Commands, Group Commanders, Area Coordinators, Readiness Support Groups, Submarine Squadrons, Ship Repair Facilities, and various Intermediate Maintenance Activities, both afloat and ashore, for budgeting, planning, production and analysis of ship maintenance. The scope of MRMS includes approximately 16 shipboard and 65 shore based intermediate and maintenance and planning activities.

Navy Standard Integrated Personnel System (NSIPS) collects, processes, and distributes personnel and pay data within Navy and to various corporate level activities within DoD. NSIPS integrates active, reserve, and retired military personnel systems, improves military personnel tracking, consolidates processes and systems, and the functionality of source data collection requirements. NSIPS will operate on shore and afloat servers, client workstations, stand-alone workstations, portable stand-alone workstations, LANs and miscellaneous hardware and will maintain regional data warehouses as well as an all-Navy archival data warehouse.

3.1.5 Geographic Information

The communication link between headquarters and ground sites to the deployed forces is performed via Standard Tactical Entry Points (STEP) Sites located at Northwest (Norfolk), VA, Wahiawa, HI, Manana, Bahrain, and Naples, Italy. These Radio Frequency (RF) and SATCOM facilities are maintained and operated by the NCTAMS

and provide the gateways to the fleet. The architecture that links these STEP sites (CONUS and Hawaii) to the NMCI is a critical design criteria.

Norfolk, Mayport/Jacksonville, San Diego, Pearl Harbor, and Puget Sound account for the major concentrations of fleet operational forces. Table 910 provides a detailed view, including the current numbers of networked buildings and personal computers.

REGION	UNITS	PERSONNEL	PERSONAL COMPUTERS	NETWORKED BUILDINGS
Mid Atlantic	432	113,250	69,607	1,000
Midwest	81	10,201	8,599	254
New Orleans	27	3,567	4,337	104
North Central	41	1,018	566	19
Northeast	167	26,052	19,696	574
Pensacola	40	9,125	11,624	104
South Central	137	10,312	5,990	218
Southeast	322	67,499	45,647	2,364
Washington DC	169	52,948	42,940	810
Hawaii	186	23,924	14,387	356
Northwest	182	44,653	24,273	456
Southwest	569	109,917	61,613	1,382
Grand Total	2,867	520,087	337,741	8,465

Table 910 Navy CONUS and Hawaii Asset Distribution

Some of the major enterprise operational systems are highly distributed and must share data across the enterprise. Particularly robust systems such as GCCS-M, NTCSS/GCSS, JWICS, Tactical Air Mission Planning System, TAMPS, and CTAPS/TBMCS require large files exchange, database downloads, graphics embedding, imagery, and other bandwidth intensive exchanges.

Heavy stress on NMCI services is expected to be created by the command centers (located at Norfolk VA and Pearl Harbor, HI), as well as the number of intelligence centers and meteorology/oceanography commands.

3.2   OPERATIONAL/TACTICAL - METOC

Operational/Tactical is one of the seven operational/functional activity areas used in this DRM to describe how the Navy performs its mission. An example of an operational shore activities that are important IT user are the Meteorology and Oceanography Commands (METOC). The intent of this section is to use the METOC example to provide a sample overview of an Operational activity mission, people and locations and relate that to the IT infrastructure that must be in place to support it. There are many such organizations that support the Navy and Marine Corps. The elements of the IT description will characterize how the work activities of this function place demands or stress on the IT infrastructure (NMCI) during the hypothetical set of potential environments in which the Navy must be prepared to operate, as described in chapter 2. The graph in Figure 1415 is provided as a way of introduction, showing the notional stress that a METOC-like function would be expected to place on NMCI during peacetime and during increases in operational tempo. The following provides the supporting detail.
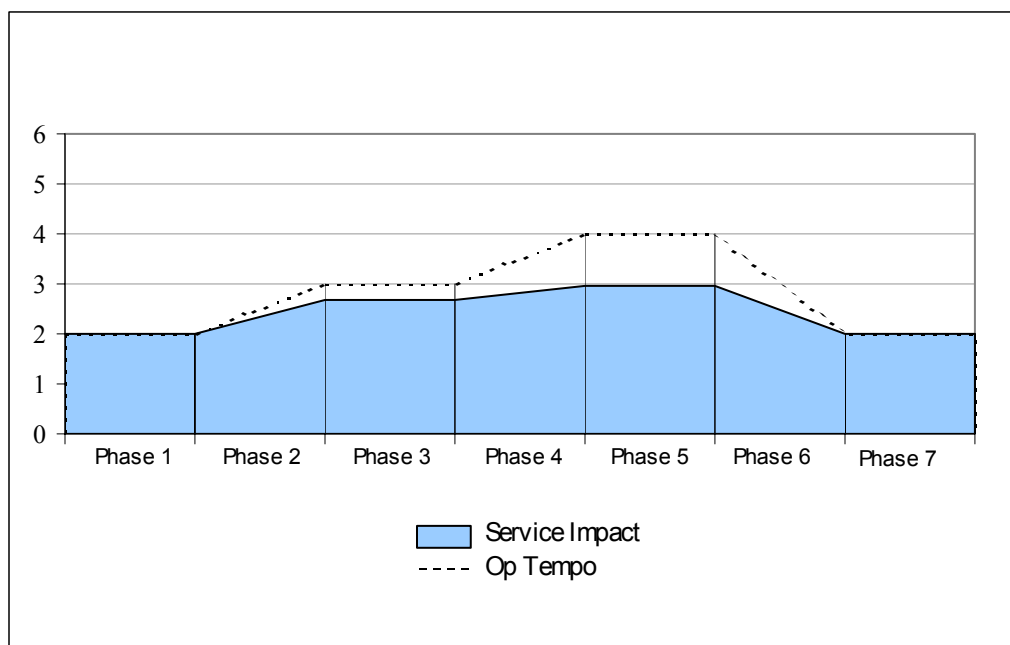
Figure 1415. METOC Impact on NMCI Services

3.2.1   Functional Description

METOC provides support for planning, safety, and execution of Navy operations ashore and afloat. METOC enhances the warfighter's ability to choose the appropriate platform, weapon, and engagement strategy.

METOC facilities provide current and forecasted descriptions of the environment (bottom of ocean to upper level of the atmosphere), and how it will impact ongoing or planned operations.   Information is made available to Navy, Marine Corps and DoD customers worldwide via NIPRNET, SIPRNET, JWICS, and integrated METOC systems at regional centers, detachments, and mobilesites.

METOC production centers (Monterey CA and Stennis Space Center MS) produce standard global environmental prediction products and specialized regional products (depending on fleet operational requirements), and make them available (push and pull) to METOC regional centers in Hawaii, Bahrain, Rota Spain, Japan, San Diego, and Norfolk. These products are the most important function of the METOC activities and critical to Navy and Marine Corps missions.

METOC detachments (located at most Navy and Marine Corps airfields and aboard most Navy Command ships) provide the required information used by customers at the operational site. These detachments will pull METOC information they need for local forecasting from the regional center in their AOR or from any other

regional/production center that can satisfy their current needs. This communication link between the production centers and the regional sites and detachments is addressed in the IT section.

3.2.2 Operational Activities at Phases 1-7

During peacetime (Steady State) operation, the METOC centers and detachment provide the environmental prediction products and special products required for operational aviation and sea based platforms. The demand for these activities is largely predictable and can be supported by a predominantly normal working hours support infrastructure. Operational exercises, special operations, and severe weather occurrences can cause requirements for expanded service, but these are exceptional occurrences.

During a surge to one MTW, production and regional centers continue to provide the same suite of standard products that are provided during peacetime. A few additional watch standers will be assigned to METOC operations floors at the production centers and at the regional center assigned responsibility for the crisis area. Extra METOC mobile teams may be assigned to the fleet in the area of concern. Message traffic will moderately increase among fleet customers, METOC production centers, and the affected METOC regional center. Requests for specialized METOC products for the area of concern will increase moderately. Priority will be given to the crisis region products, but every attempt will be made to meet all METOC product requests. The regional center and detachment(s) in the crisis region will have a significant increase in operational tempo. Additional manpower will be assigned to each shift as necessary to support the increase in requests for METOC information. The stability of IT capabilities becomes even more critical for getting timely products to customers. Bandwidth available to get products to customers may become an issue because of competition for bandwidth from non-METOC network users.

During sustained operations in support of one MTW, METOC will see a continuing increase in operational tempo at production centers and affected field activities (regional centers, detachments, and mobile teams).

During a surge to a second MTW, the development of a crisis in a second region will cause another increase in special product requests for the METOC production centers at Monterey and Stennis Space Center and for the regional center assigned to support the new conflict area. Production center operations floors may need to assign additional personnel, but not as many as was necessary to ramp up for the first crisis/conflict. The assigned regional center for crisis #2 will experience increased operational tempo (additional watch standers, etc) similar to that experienced by the regional center assigned to crisis #1. During sustained operations in support of two MTWs, METOC maintains increased operational tempo at production centers and field activities assigned to the two conflict regions.

During redeployment of forces from the two MTW scenarios, METOC activities remain relatively unchanged. Following redeployment of all forces, METOC activity operations floors and mobile teams return to normal manpower and operations levels.

3.2.3 Specific IT Support

Large volumes (gigabytes) of data must be transferred daily from production centers to regional centers. Transfer of METOC operational data is the most critical aspect of the METOC mission and requires highly dependable and secure IT support. METOC has lower priority (and lower volume) requirements for sharing administrative information among all METOC activities.

During peacetime operations, the following generalizations concerning IT support for METOC can be made:
- High bandwidth communications between production centers and regional centers.
- High bandwidth surge capability between regional centers and detachments.
- Moderate bandwidth requirements for administrative traffic among activities.
- COTS HW and SW for administrative applications at all activities. Heaviest requirement for these services is located at production and regional centers.
- Help desk 8x5 operation with some surge after hours.
- Moderate use of multimedia at production and regional centers.
- Moderate use of VTC at production and regional centers.
- Some data administration support at production centers.
- Moderate number of classified users at all activities.
- High data processing requirements at production centers necessitating supercomputer capabilities.

- Primary measures of effectiveness are the timeliness and accuracy of METOC information provided to customers. METOC forecast data is highly perishable.

During surge to a one MTW, IT support requirements remain the same as in steady state except for moderate increases in computer processing and communications (voice, video, and data) requirements at the production centers and the regional center and detachment(s) responsible for the crisis area.

During sustainment operations for a one MTW scenario, IT support requirements are focused on system stability and bandwidth availability. Effectiveness is measured by how timely and accurate METOC products are and how well they contribute to Navy success in the conflict.

During surge to the second MTW, there will be moderate increases in computer processing and communications (voice, video, and data) requirements at the production centers and the regional center and detachment(s) responsible for the new crisis area.

IT support required for METOC functions remains unchanged through phase 5 and phase 6, and returns to peacetime level support requirements during phase 7.

The METOC IT managers estimated stress data for the list of 13 NMCI services introduced in chapter 2. At steady state METOC is a significant user of NMCI services and requires distribution of bandwidth intensive products across a wide geographic area. Table 1112 shows the phase-by-phase changes in stress as METOC responds to increasing operational requirements.

USN METOC

Network Services	Phase 1 Peacetime Ops	Phase 2 Deploy MTW1	Phase 3 Employ MTW1	Phase 4 Deploy MTW2	Phase 5 Employ MTW1/2	Phase 6 Redeployment	Phase 7 Peacetime Ops
Security Services: firewalls, intrusion detection, availability, encryption.	Steady State	0	0	0	0	0	0
Wide Area Network Connectivity: Access to DISN (SIPRNET & NIPRNET); commercial WAN; Internet. Includes capacity, functionality, and assurance.	Steady State	1	0	1	0	-2	0
Base Area and Local Area Network Services: Voice, video and data; End-user to WAN POP; Assumes classified and unclassified; Includes availability, capacity, functionality, and assurance.	Steady State	1	0	0	0	-1	0
Desktop Hardware and Software: Provisioning / relocating of end user desktop suites.	Steady State	0	0	0	0	0	0
Help Desk and Technical Support: Touch labor & support to users.	Steady State	1	0	0	0	-1	0
Enterprise Network Management: Includes perf mngt, directory, DNS, connectivity or accounts (adds/moves/ deletes), VPN spt, sys integration, config mngt, capacity planning; class and unclass.	Steady State	1	0	0	0	-1	0
Organizational Messaging: AUTODIN & DMS	Steady State	1	0	1	0	-2	0
Email: Capacity, availability, classified and unclassified.	Steady State	0	0	0	0	0	0
Web Services: Web enabled applications hosting; search engines; news group services; web site hosting.	Steady State	0	0	0	0	0	0
Remote Telephone Access	Steady State	0	0	0	0	0	0
Video-teleconferencing: Including capacity, availability, management and set up of sessions.	Steady State	1	0	1	0	-2	0
Telephony: Switched voice, voice over data, cellular service, pagers.	Steady State	0	0	0	0	0	0
Training: System administrator, end user training.	Steady State	2	0	0	0	-2	0
Weighted Average of Impact on NMCI Services. First cell is Steady State SLI.	2.00	2.70	2.70	2.95	2.95	2.00	2.00

Table 1112 METOC

3.2.4 Supported Systems

There are four major information systems that support METOC functions.   These systems are listed below, along

with a brief description of each and its key impacts on NMCI supporting infrastructure and services.

- Navy Integrated Tactical Environmental Subsystem NITES/METOC Integrated Data Display System (MIDDS) – This system supports each regional center and detachment.
- Interim Mobile Operations Surveillance Sensor (IMOSS) – This is the mobile version of NITES carried by METOC mobile teams.
- ADMIN Systems – These systems support all METOC activities/locations. NMCI could provide full support for these systems as they can be hosted on standard COTS HW.
- SUPERCOMPUTER – Systems at Production Centers (Monterey CA and SSC MS)

3.2.5 Geographic Information

The primary CONUS and Hawaii geographical concentrations that perform this function include Monterey CA, Stennis Space Center MS, Norfolk VA, Pearl Harbor HI, and San Diego CA. Numbers of military personnel, government personnel and networked buildings at each of these sites is provided in Table 1314 below.

LOCATION	STATE	MILITARY PERSONNEL	GOVERNMENT PERSONNEL	NETWORKED BUILDINGS
Stennis Space Center	MS	17	44	2
Stennis Space Center	MS	58	936	20
Suitland	MD	27	13	4
Monterey	CA	96	160	3
Asheville	NC	4	4	1
Tinker AFB	OK	3	1	1
Norfolk	VA	86	28	2
Jacksonville	FL	40	9	1
Brunswick	ME	22	3	1
Key West	FL	11	1	1
Mayport	FL	13	2	1
Oceana	VA	15	2	1
Patuxant River	MD	17	1	1
Pensacola	FL	32	7	4
Corpus Christi	TX	19	3	1
Ft. Worth	TX	10	1	1
Kingsville	TX	12	1	1
Meridian	MS	10	2	1
New Orleans	LA	9	1	1
Newport	RI	4		1
Milton	FL	10	2	2
Willow Grove	PA	10	1	1
Pearl Harbor	HI	50	13	2
Kaneohe	HI	20		2
San Diego	CA	83	10	2
Silverdale	WA	5		1
El Centro	CA	7		1
Fallon	NV	10	3	1
Lemoore	CA	13	2	1
Pt. Mugu	CA	3		1
Whidbey Island	WA	27	1	1
TOTALS		**761**	**1251**	**65**

Table 1314 METOC Personnel and Asset Distribution

3.3   MANPOWER AND PERSONNEL - NAVY

Manpower and Personnel is one of the seven operational/functional activity areas used in this DRM to describe how the Navy performs its mission. The intent of this section is to provide a brief overview of the mission, people, and locations that relate to this function, leading to the real objective - a description of the IT infrastructure that must be in place to support it. The elements of the IT description will characterize how the work activities of this function place demands or stress on the IT infrastructure (NMCI) during a hypothetical set of potential environments in which the Navy must be prepared to operate, as described in chapter 2. The graph in Figure 1617 is provided as a way of introduction, showing the notional stress that Manpower and Personnel could be expected to place on NMCI during peacetime and during increases in operational tempo. The following provides the supporting detail.
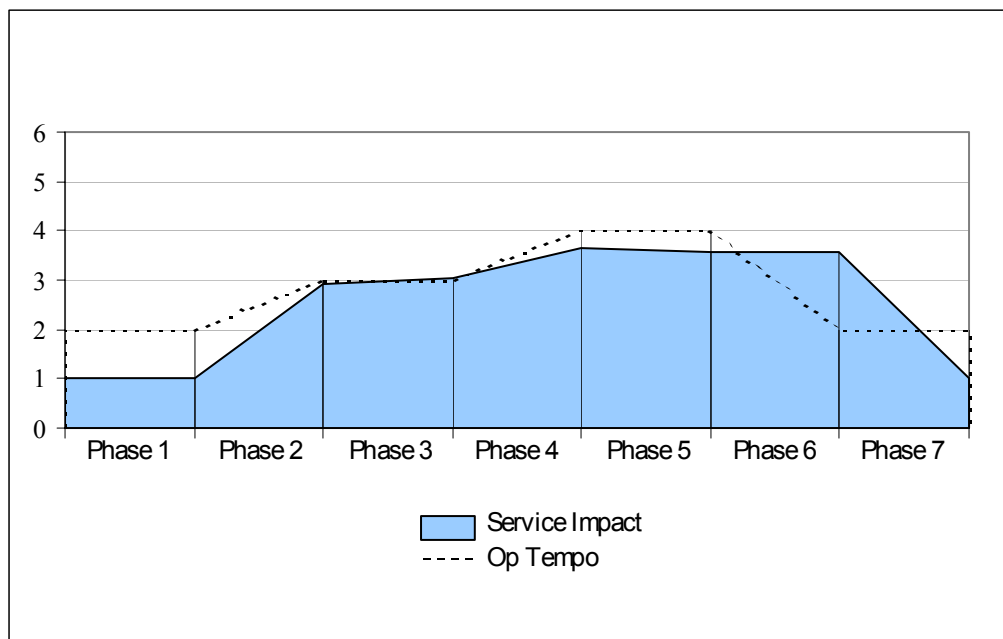
Figure 1617. BUPERS Impact on NMCI Services

3.3.1   Functional Description

The functions of Navy Manpower and Personnel include recruitment, accession, distribution and assignment of officers and enlisted personnel across the 23 Navy manpower claimants (e.g., CINCLANTFLT, Naval Air System Command (NAVAIRSYSCOM), and Chief of Naval Education and Training (CNET)) in response to pre-defined and/or emergent manpower requirements. Manpower and Personnel management functions for both Active Component (AC) and Reserve Component (RC) populations are outlined below. Seven major organizations within the Manpower and Personnel Claimancy were identified in the NMCI Data Call for 30 June 1999. These include:

- Bureau of Naval Personnel (BUPERS) DC in Arlington, VA which provides programming, budgeting and policy guidance for field implementation of Deputy Chief of Naval Operations (DCNO) N1 functions within the MP Claimancy
- Chief Navel Personnel System (NAVPERS) and Navy Personnel Command (NPC) in Millington, TN, which conducts AC/RC officer promotions, retirement and personnel management, AC officer and rated-enlisted personnel assignment, detailing, and order-writing functions, personnel and pay systems liaison, RC mobilization policy and procedures guidance, AC Quality of Life policy and support, and programming and budgeting support
- Enlisted Personnel Management and Accounting Center (EPMAC) in New Orleans, LA which performs AC non-rated enlisted and RC enlisted TAR distribution
- Navy Manpower Accounting Center, (NAVMANPAC) Millington, TN which develops and maintains Navy pre-defined manpower requirements through the TFMMS to support Navy programming and budgeting requirements

- Commander, Navy Recruiting Command (CNRC), Millington, TN to meet AC officer and enlisted personnel recruiting needs
- Naval Reserve Personnel Center, New Orleans, LA which provides RC personnel management, and mobilization screening and order-writing support for non-drilling RC and retired United States Navy (USN)/United States Naval Reserve (USNR) officer and enlisted members.

The functions highlighted below require extensive coordination with individuals, units, Fleet and Type Commands in other Navy Claimancies (including PSAs/PSDs/Command Support Detachments (CSDs) within the Navy Personnel/Pay Administrative Support System (PASS) operated by CINCPACFLT and CINCLANTFLT), Unified and Allied Commanders.

- Identify and prioritize manpower requirements and skill levels needed to ensure that AC and RC operating forces and shore-based naval forces can operate at full mission capability for indefinite periods. Identify and prioritize emergent manpower needs of Navy, Joint and Allied force commanders
- Recruit Non-Prior Service (NPS) and veteran personnel and/or access RC personnel to meet both steady-state and surge manpower requirements.
- Ensure that personnel requirements are met as quickly and efficiently as possible through screenings to identify and assign (by order writing) properly qualified personnel from appropriate populations depending upon mobilization requirements and authorities.
- Ensure that all Navy personnel are properly accounted for, tracked and administered during their career assignments
- Ensure that all Navy personnel receive the proper pay, allowances and entitlements appropriate to their qualification, assignments and duties
- Where required, that personnel not properly trained, outfitted or equipped as a function of peacetime unit assignment are trained, outfitted and equipped to meet contingency requirements as units or individuals before deployment
- Ensure that Non-Prior Service (NPS) AC and RC personnel are provided the minimum training required by law and Office of the Secretary of Defense (OSD) guidance during peacetime, contingencies and war before allowing their deployment to OCONUS ashore assignments.

The activities of these Manpower and Personnel activities require a significant amount of communication both within the MP organizational structure, with field commands and individuals, and with AC and RC field activities. AC personnel activities ashore:

- PSAs (1 Asia, 6 CONUS, 1 Europe)
- 73 PSDs (57 CONUS, 16 OCONUS,)
- 29 CSDs (22 CONUS, 7 OCONUS)

These activities are in a state of dynamic change, downsizing and realignment. Forty of the PSDs also provide some support to RC activities. PSDs/CSDs provide the records management, payroll, and other administrative support required for approximately 275,000 AC officers and enlisted personnel during peacetime. The number of AC and RC members supported during contingencies and war will expand to encompass some portion of the population described in Table 15 (April 1999 Strength Report) depending upon the level of mobilization invoked and the number and type of activities established or augmented.

Active Component	
Active Duty	275,000
Reserve Component	
Selected Reserves	70,800
Individual Ready Reserves	108,400
Retired Reserves	482,495

Table 15 Navy and Navy Reserve Manpower

As indicated by the number of Navy reserve personnel, there is a significant task associated with the management of enlisted and officer reserve personnel. Selected Reserve (SELRES) personnel are assigned to over 290 reserve

activities located throughout the U.S. where they maintain their readiness and training, and periodically perform training duty with AC forces. They can be recalled to active duty voluntarily or involuntarily to serve on active duty depending upon the recall/mobilization authority invoked by the President and/or Congress.

3.3.2 Operational Activities at Phases 1-7

During Peacetime (Steady State) operation, Navy Manpower and Personnel Functional/ Tactical commands are performing the following activities:

Identification of unit and individual manpower requirements and their inclusion in the TFMMS and Joint Operation Planning and Execution System (JOPES)

Identification, recruitment, training and assignment of qualified personnel.

Accounting for and tracking the location and status of personnel.

Management of Active Component and RC personnel recruitment, promotion/demotion, career management, family support and retirement throughout their Navy service.

During a surge to one MTW, the following changes in activities would be required:

As contingencies unfold, unit and individual requirements are identified, prioritized and re-prioritized as a result of changing requirements and scenarios, peacetime manning levels are revised, and additional commands become involved in identifying requirements (many of which will be emergent and only generally defined), target populations are screened for qualified personnel and actual assignments or re-assignments are made to meet evolving requirements.

Active Component personnel, pay and order-writing systems stress as personnel and their assignments change in response to contingency force changes and they are deployed as augmenting or replacement personnel for units, staffs and shore activities.

As RC force and individual requirements for augmentation of the Active Component are identified, RC as well as Active Component personnel, pay and order-writing systems and databases stress as screenings are initiated for qualified units and individuals to meet requirements within the limits of approved recall and mobilization authorities. Once identified and selected, their processing onto active duty stresses the field and corporate level personnel and pay systems as personnel data is pre-staged, new pay records are opened, orders are prepared and issued though order-writing systems, and records transition from RC to AC status. Once they are gained to AC status, RC personnel are tracked and accounted for recall/mobilization reporting purposes through the AC systems until their release from active duty or discharge.

During the heightened levels of activities at phase 3, the following activities will be associated with the in-place one MTW activities.

- Active Component: Achieve required manning levels in operating and shore-based forces, and identify and prioritize emergent manpower requirements for fill by Active Component or RC sources.
- Continue to mobilize and deploy forces (units and individuals) at maximum throughput capabilities indicated below to meet emergent, pre-identified and prioritized manpower needs. Determine needs for a higher level of mobilization authority needed based on requirements and screening and processing yields from available RC populations.

During a surge to two MTW, Manpower and Personnel would determine manpower requirements and personnel manning priorities for re-deploying, rotational and relief operational and shore-based Navy forces, and for the shore infrastructure required to support them. Match with remaining Active Component and RC populations, screen individuals and deploy them to meet manning priorities.

For redeployment of forces from the two MTW, heavy activity would be required to identify, coordinate and time-phase the active and Reserve force re-deployments, and out-processing/ de-mobilization of Reserve forces. NMPS and base activities supporting their out-processing will be loaded to the maximum at this time, and will probably continue to be for some period beyond end of hostilities and re-deployment of active forces. Relief of Reserve units by Active units at forward deployed locations may drive additional, undefined Active Component workloads.

Recruiting activities must also be considered during steady-state and during the one or two MTW scenarios. Recruitment activities at steady-state emphasize advertisement and recruitment operations. However, during any

MTW scenario, the recruiting emphasis will shift to one oriented towards processing of assigned personnel. These assignments of personnel would result from personnel allocations associated with national-level implementation of a draft or conscription.

3.3.3 Specific IT Support

During peacetime/steady-state operations, the primary IT flow is from AC operating forces and MP shore activities to personnel management offices of MP activities in Millington, TN and New Orleans, and the Navy corporate personnel databases at Defense Mega Center (DMC), Chambersburg, PA. Pay transactions depend primarily upon transactions between DMC Chambersburg, PA and Defense Finance and Accounting Service (DFAS), Cleveland Center for Navy.

Initial requirements for IT during contingencies will focus on identification and prioritization of emergent manpower requirements, and the determination of which pre-identified manpower requirements in both operating forces and shore support activities must be filled to meet Navy, Joint and other needs. The focus of communication begins to shift at the field level from operating units and shore activities towards more channeled communications between senior commanders staffs and OPNAV. At present, there is no clearly defined system or methodology for identifying and prioritizing these changing and emerging manpower needs. This leads to high rates of voice, video, and data in an effort to identify and communicate field commander's requirements to OPNAV offices for review and validation, then to communicate the validated requirements from OPNAV to the MP field activities that generate the required personnel resources. As personnel resources are moved, IT messages, and voice, video, and data levels build between NPC at Millington, TN and EPMAC at New Orleans, LA, and this has a corresponding impact among the operating forces and supporting shore activities affected by these personnel changes, thus driving additional IT between Navy corporate personnel systems and DFAS-CL.

During recalls and mobilizations, IT loading builds between Fleet Commanders and OPNAV for requirements identification and validation. As requirements are identified, voice, video, and data levels build between and among MP activities at Millington and Washington to recommend/establish levels of recall/mobilization needed to meet requirements, there is coordination with other services of OSD/NAVY recall/ mobilization personnel policies and procedures, and between Millington, CNRF, and NRPC offices in New Orleans, and NMPS as RC populations are screened, recalled/mobilized, accessed onto active duty, processed and deployed. In the event of a multiple MTW scenario, the level of IT will increase as additional AC and RC forces are deployed and/or re-deployed and the available pool of qualified personnel shrinks and the list of supported activities grows. As RC forces and individuals are ordered to NMPS for processing, pre-staging of personnel data from RC corporate personnel databases to gaining activities at the NMPS will increase to facilitate gain (accessions) processing and reduce errors.   It may also be compounded by requirements to conduct some level of simultaneous mobilization and demobilization at NMPS and Naval Reserve Activities (NRAs) with concomitant prioritization and coordination problems, and concomitant two-way data flow between NMPS-PSDs and corporate AC and RC databases.

Upon demobilization, heavy use of IT will be needed to support coordination of re-deployment of AC and RC forces, and the stand-down of augmented shore activities. Initially, much of the IT requirement will be between senior Fleet Commanders and OPNAV offices, but early on it will require extensive coordination between operating forces and NMPS, and between NMPS and MP activities at many sites.   Depending upon the number of RC forces recalled/mobilized and OSD demobilization guidance (medical and other screenings, surveys, benefits administration, personnel accounting and reporting, etc.), this phase may extend for some period at a relatively high tempo. The data flow for RC forces would be heavily from NMPS-PSDs to corporate AC and RC personnel databases, and between the AC database and DFAS-CL. At the same time, AC forces will likely be re-deploying units and individuals to return to a steady state operation that includes a determination and re-balancing of residual AC personnel resources.

During steady state, Navy Manpower and Personnel will rely heavily on the NMCI for support of their mission. All manpower, personnel, order-writing and pay systems are communication dependent. Both during steady state and during surge conditions, the basic functions of manpower and personnel management require distributed computing across the wide area.

During surges to one and two MTW, the NMCI will be stressed by the surge of activity required to identify manpower requirements and their relative priorities, identification and screening of affected populations, and the selection, assignment and/or re-assignment of qualified personnel. Voice, video, and data will all be heavily relied upon to meet required email with attachment and database transaction processing. Use of all current legacy

manpower, personnel and pay, and joint systems is significantly increased.

3.3.3.1 Selected Reservists (SELRES)

Drilling Navy Selected Reservists (SELRES) and Voluntary Training Unit (VTU) members will require the same basic NMCI seat connectivity and functionality as the regular Navy. Naval Reserve Force (RESFOR) has recommended consideration of a hybrid seat, consisting of (and priced in accordance with) all the connectivity and functionality of the basic seat but minus the client hardware.

Client hardware is currently supplied in large part via PCs (owned by Reservists) or PCs at their private sector workplace (or school, library, church, etc.). Providing and maintaining client hardware for each Drilling Reservist would be extremely costly. Access could be achieved by providing each Drilling Reservist a hybrid NMCI seat (without a PC). The permissions or rights accorded these hybrid seats would afford the Drilling Reservists full connectivity and functionality. Although the hybrid seat would not include dedicated PCs, the servers and related infrastructure hardware (circuits, modems, and ports), software, and support would still be required.

Since the hybrid NMCI seats could be employed either during off full-time user hours (during drill weekends and after working hours) and during Active Duty periods (on AT, ADT, IDTT, or ADSW orders), the use of hybrid NMCI seats might not place extraordinary network / system demands on the NMCI infrastructure. Realistically, though, the hybrid NMCI seat users would place cyclic demand peaks on the infrastructure immediately prior to and at the close out of drill weekends.

3.3.3.2 Navy Recruiting

Currently Recruiting Districts and Headquarters are tied together with fractional T1 lines provided by EPOCH. Through these connections, they operate a Virtual Private Network (VPN) via Checkpoint firewalls. The stations connect via dial-in modems, using either an 800 dial in or a local EPOCH account. Mail accounts are maintained currently for selected recruiters (about 3500), with a planned expansion for all recruiters to number about 6000. MEPS connectivity is via a dial-in modem to the recruiting mainframe-based reservation and classification system (known as PRIDE) which is currently located in Mechanicsburg, PA. The dial-in is via MCI-Tymenet.

Recruiting is currently providing each of the Military Entrance Processing Sites (MEPS) with LANs and network connectivity to eliminate the need for dial-up access.   Recruiting also has a contract web site called Navy.Jobs.com, which is used for advertising and leads generation. As potential recruits hit the site, they are asked to provide information concerning address, phone, etc. which is forwarded to a database located in Rockville, MD. This database is also the repository for leads generated from mail outs and a 1 800 usa.navy call center. Leads are sent via email to the applicable district and to recruiters in the field based on the potential recruit's zip code.

For IT support of Recruiting during any surge to one or two MTW, the dispersed community of recruiters will require sufficient bandwidth to support increased phone and VTC traffic.

3.3.3.3 Graphical Representations

The top six services (Security, Enterprise Network Management, Help Desk, Wide Area Network Connectivity, Base Area and LAN Services, and Video Teleconferencing) are displayed based upon their Services Impact evaluation performed by stakeholders. The graphical representations are shown in Figure 18. The supporting data is provided in Table 1617. The most notable stress on the NMCI occurs during one and two MTW for Help Desk and Video Teleconferencing.
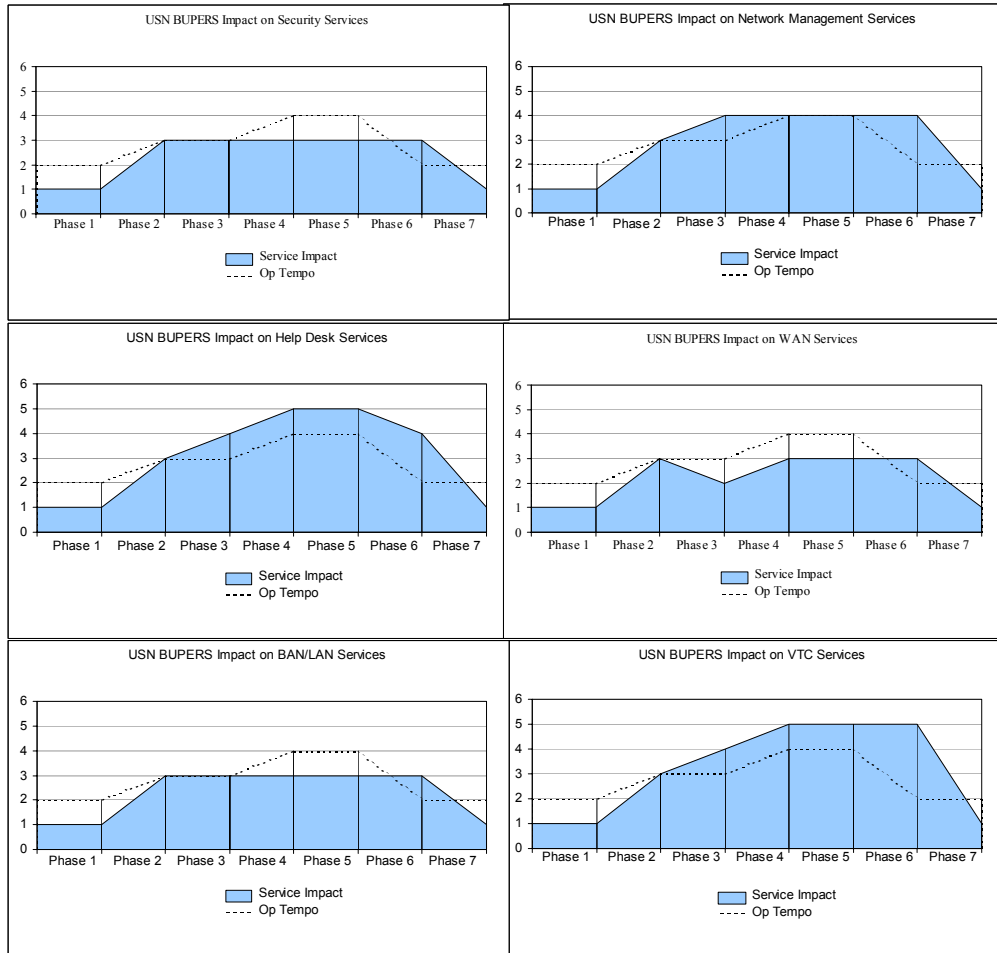
Figure 18. Individual Service Impacts for Manpower and Personnel

The operational/functional IT managers estimated stress data for the list of 13 NMCI services introduced in chapter 2.The data includes the six graphically depicted above plus seven others. The complete set of data is presented in the NMCI Services Impact Worksheet below.

USN BUPERS

Network Services	Phase 1 Peacetime Ops	Phase 2 Deploy MTW1	Phase 3 Employ MTW1	Phase 4 Deploy MTW2	Phase 5 Employ MTW1/2	Phase 6 Redeployment	Phase 7 Peacetime Ops
Security Services: firewalls, intrusion detection, availability, encryption.	Steady State	2	0	0	0	0	-2
Wide Area Network Connectivity: Access to DISN (SIPRNET & NIPRNET); commercial WAN; Internet. Includes capacity, functionality, and assurance.	Steady State	2	-1	1	0	0	-2
Base Area and Local Area Network Services: Voice, video and data; End-user to WAN POP; Assumes classified and unclassified; Includes availability, capacity, functionality, and assurance.	Steady State	2	0	0	0	0	-2
Desktop Hardware and Software: Provisioning / relocating of end user desktop suites.	Steady State	1	-1	1	0	0	-1
Help Desk and Technical Support: Touch labor & support to users.	Steady State	2	1	1	0	-1	-3
Enterprise Network Management: Includes perf mngt, directory, DNS, connectivity or accounts (adds/moves/ deletes), VPN spt, sys integration, config mngt, capacity planning; class and unclass.	Steady State	2	1	0	0	0	-3
Organizational Messaging: AUTODIN & DMS	Steady State	2	0	1	-1	1	-3
Email: Capacity, availability, classified and unclassified.	Steady State	3	-1	1	-1	2	-4
Web Services: Web enabled applications hosting; search engines; news group services; web site hosting.	Steady State	2	1	0	0	0	-3
Remote Telephone Access	Steady State	1	0	0	0	0	-1
Video-teleconferencing: Including capacity, availability, management and set up of sessions.	Steady State	2	1	1	0	0	-4
Telephony: Switched voice, voice over data, cellular service, pagers.	Steady State	1	0	1	0	1	-3
Training: System administrator, end user training.	Steady State	2	-1	1	0	-1	-1
Weighted Average of Impact on NMCI Services. First cell is Steady State SLI.	1.00	2.90	3.05	3.65	3.55	3.55	1.00

Table 1617 BUPERS

The Manpower/Personnel functional area mission requirements previously described, during steady state and through the phases of MTW, have varying priorities as determined by the command authority. The IT services that support these mission requirements similarly have priorities that closely mirror the mission priorities. Those priorities must be reflected in the performance measures by which the service provider solutions are evaluated and by which the ultimate NMCI service is measured. The Manpower/Personnel functional area has identified the following priorities along with their corresponding measures of effectiveness.

Priority	Required IT	Performance Measures
1	High reliability	Attack blocking, system integrity, corruption, network disaster
2	Ease of access by user	Network availability, host applications
3	High degree of security	Attack blocking, system integrity, corruption, network disaster
4	Robust surge	Throughput, processing, storage
5	Interoperability	Seamless exchange of data among DoD/Joint partners

Figure 19. Functional Area Performance Measures

Given the stated IT support required to support Manpower and Personnel, the measures of effectiveness described in Figure 19 provide the specific areas that must be captured by the NMCI services to ensure satisfactory performance of functional mission requirements. The area of surge is certainly one concern for manpower and personnel because of the large delta between peacetime requirements and potential MTW scenarios. Technologies like SmartCard are potentially a large part of any future manpower and personnel solution because of its ability to dramatically increase the scope and responsiveness of services while at the same time reducing the cost of providing those services. Joint interoperability will always be an important area for manpower and personnel.

3.3.4 Supported Systems.

Manpower and Personnel use a number of DoD and Navy designated enterprise functional systems to perform required business functions. The following activity areas and the supporting systems are identified. They are used both during steady state as well as in surge operations.

Requirements Identification and Prioritization:

Navy Total Force Manpower Management System (TFMMS) - the Navy corporate system for pre-determined manpower requirements by Unit Identification Code (UIC)

JOPES - the JCS approved system for stating primarily unit requirements, deployment timeframes, places, and procedures.

Messages, and voice, video, and data, alternative/additive means employed within Navy to identify emergent manpower and personnel requirements and priorities for units and individuals.

Personnel management after recruitment:

Active Components

- Officer Personnel Information System (OPINS) - Navy corporate personnel system for officer personnel on extended (>29days) active duty for other than training purposes.
- Navy Enlisted System (NES) - Navy corporate personnel system for enlisted personnel on extended (>29days) active duty for other than training purposes. Note: OPINS/NES taken together are sometimes referred to as Manpower and Personnel Management Information System (MAPMIS) although in reality they are managed as separate files in a single database.
- Source Data System (SDS) - Current field connective system between field PASS activities ashore and OPINS/NES corporate database at Defense Message System (DMS) Chambersburg, PA.
- Source Data System (SDS) - Field personnel reporting and editing system that links most PSAs/PSDs/CSDs with OPINS/NES corporate databases.
- Diary Message Reporting System (DMRS) - A personnel diary message reporting mechanism used primarily by afloat units to effect personnel and pay changes when they do not have a more direct capability to access OPINS/NES files. Also can be used by shore-based activities as a backup to other methods.
- NSIPS - A new field personnel system for linking PSAs/PSDs/CSDs and NRAs to both AC and RC corporate personnel databases. A replacement for SDS, DMRS and the MP module of Reserve Standard Training , Administrative and Reporting System (RSTARS). Currently in early stages of deployment. Initial deployment, Phase 0 only provides for replacement for MP RSTARS module functions for

IDT/AT/ADT associated with inactive duty training and administration of drilling reservists. Later phases will provide for replacement of current legacy AC personnel field systems.

- Personnel Net (PERSNET) - CNO N1/BUPERS/NPC LAN/WAN – This includes the Enlisted and Officer Assignment Information System (EAIS/OAIS) which are the AC enlisted and officer order-writing and budgeting systems respectively. Active Component and Reserve on extended active duty of 30 days or more: OPINS, NES, SDS, DRMS, NSIPS, PERSNET, EASIS/OASIS.

Reserve Component: IMAPMIS, RHS, RSTARS

- Inactive Manpower and Personnel Management System (IMAPMIS)- Navy corporate personnel database for all RC personnel not on recall to extended active duty. Includes all elements of the RC, including SELRES, IRR, Standby, Fleet Reserve, Retired USN/USNR personnel.
- Reserve Headquarters System (RHS) - COMNAVRESFOR corporate personnel system for SELRES and drilling Integrated Radio Room (IRR) members assigned to NRAs within his claimancy. Also currently used to support order-writing for RC members recalled to extended active duty.
- Reserve Standard Training , Administrative and Reporting System (RSTARS) - A field-level personnel reporting system connecting CNRF with subordinate echelons within his claimancy and active duty sites that are involved in peacetime training and administration of drilling reservists.

Pay support: Active Component: UMIDS, DJMS-AC; Reserve Component: MCPS, DJMS-RC

- Uniformed Micro Integrated Disbursing System (UMIDS) - A DFAS - developed pay reporting system that can be used by ships and PASS offices to correct and/or report pay problems/transactions from the field directly to DFAS-CL.
- Defense Joint Military Pay System - Active Component/Reserve Component (DJMS-AC/RC) - DoD-mandated, corporate pay systems for Army, Navy, Air Force for use by the respective components. Each is tailored to meet the primary concerns of the component it is designed to serve, although the Army and Air Force have built bridges between the two that allow for recalled members to "appear to remain" in DJMS-RC for pay purposes when on extend recall in the AC. Navy plans to deploy DJMS-RC soon, possibly in conjunction with NSIPS phase 1 deployment next spring or summer, as a replacement for current legacy RC pay system called MCPS.

3.3.5 Geographic Information.

The communication links between components of the Manpower and Personnel and the functional enterprise information systems that support their missions are indicated in the following, first for the Active component, second the RC, and third, the Naval Recruiting Command component.

Active Component:

- OPNAV Washington and Navy Manpower Accounting Center (NAVMANPAC), Millington: TFMMS, JOPES

- Most major Navy ships and stations: OPINS, NES, SDS, DMRS, NSIPS, (field activities do not have the pay systems; they submit personnel changes to corporate personnel systems via the appropriate field reporting personnel system and that drives changes in pay through interfaces between the corporate personnel systems and the corporate pay systems at DFAS-CL). There are heavier concentrations in the Fleet Concentration Areas (FCAs).

- Navy Mobilization Processing Sites (NMPS) at the locations shown in Table 18 use pre-staged personnel data from RC corporate system to access RC personnel in AC systems at those sites for recall/mobilization/demobilization processing. NMPS can provide services for active, reserve and DoN civilians, as required, at processing rates indicated in Table 18.

Active Components	Per Day Processing Rate
NAVSUBASE New London	200
NAVDIST Washington DC	200
NAVBASE Norfolk	600
MCB Camp Lejeune	200
NAVBASE Jacksonville	400
NAVAIRSTA Pensacola	200
CBC Gulfport	200
NAVBASE Great Lakes	400
NAVBASE Seattle	400
CBC Pt Hueneme	200
MCB Camp Pendleton	200
NAVBASE San Diego	600
NAVBASE Pearl Harbor	200

Table 18 Mobilization Processing Rates by Site

- EPMAC, New Orleans, LA: DMRS, NES, SDS, AMSAS
- CNO N1 and BUPERS Washington, NAVPERSCOM, Millington: In addition to the ship and station systems above: TFMMS, EAIS/OAIS, PERSNET, IMAPMIS,
- Unified and Fleet Commanders through OPNAV to NAVPERSCOM, Millington, TN - JOPES
- DFAS-CL interfaces for pay matters from corporate AC personnel systems located at DMC Chambersburg, PA, DJMS-AC/RC, UMIDS

Reserve Component:
- COMNAVRESFOR: RHS, RSTARS, MCPS, JOPES
- Naval Reserve Activities (NRAs): RSTARS
- Naval Reserve Personnel Center (NRPC): IMAPMIS, RHS, AMSAS

Recruiting Component

The CNRC must operate with recruiters scattered all over CONUS and Hawaii. This highly dispersed workforce includes the following:

350 personnel at the Headquarters in Millington, TN, 4 area offices, 31 district offices located in major cities around the country, and about 1300 recruiting stations scattered thru large and small towns in CONUS, and a few OCONUS sites (Guam, Yokosuka, Puerto Rico, and Germany).

Area Offices are staffed with 12-16 personnel; district offices to about 30. The stations under each district are generally divided geographically into 7-8 zones. Stations are manned with anywhere from 1-7 recruiters.

CNRC also staffs about 5 positions at each of 65 MEPS located in larger cities around CONUS.

BUPERS Claimancy Data:

The numbers of users at each of the claimancy sites is indicated in Table 19. The total for CNRC reflects a wide geographic dispersion of recruiting activities located across CONUS.

Activity	Authorized Military	Authorized Civilians	PCs	Networked Buildings	Locations
NAVMAC	114	54	267	1	Millington
CNP & NPC	1,269	625	2,706	14	Millington
CNRC	6,437	559	7,136	1283*	*
EPMAC	146	64	339	1	New Orleans
NRPC	77	213	266	2	New Orleans
BUPERS	28	104	599	2	Wash. DC

Table 19 Manpower Personnel Demographic Data (6/30/99)

The PASS activities (PSAs/PSDs/CSDs) are not part of BUPERS Claimancy, and are divided between CINCPACFLT and CINCLANTFLT claimancies. Their numbers and locations are indicated within those activities. The NAVPERSCOM role is one of liaison and coordination of personnel field actions and systems between the PASS field activities and the Navy corporate personnel systems.

3.4   LOGISTICS AND INFRASTRUCTURE - NAVY

Logistics and Infrastructure is one of the seven operational/functional activity areas used in this DRM to describe how the Navy performs its mission. The intent of this section is to provide a brief overview of the mission, people, and locations that relate to this function, leading to the real objective - a description of the IT infrastructure that must be in place to support it. The elements of the IT description will characterize how the work activities of this function place demands or stress on the IT infrastructure (NMCI) during a hypothetical set of potential environments in which the Navy must be prepared to operate, as described in chapter 2. The graph in Figure 20 is provided as a way of introduction, showing the notional stress that Logistics and Infrastructure could be expected to place on NMCI during peacetime and during increases in operational tempo. The following provides the supporting detail.
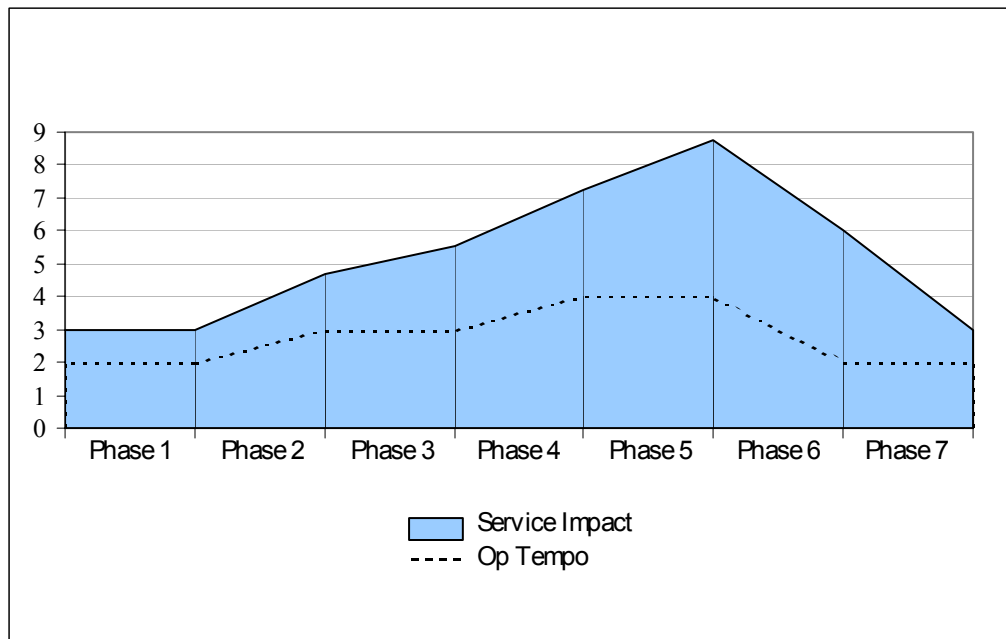
Figure 20. Logistics Impact on NMCI Services

3.4.1   Functional Description

The logistics infrastructure is described by six functional elements, each with its own organizations, facilities, and

assets keyed to the services it provides. These functional elements are:

Supply: Supply centers, inventory control points, contracting centers, supply inventories, fuel pipelines, fuel farms, weapons stations

Maintenance: Shipyards, aviation depots, intermediate maintenance activities

Transportation: Ocean terminals, air terminals, operational support aircraft, vehicle fleets, travel offices, container consolidation points

Engineering: Public works centers, construction, utilities, maintenance, damage assessment, engineering and contract support, disaster recovery, and contingency design and construction. SEABEEs

Health Services: Hospitals, medical centers, dental centers, medical supply inventories

Quality of Life: Bachelor quarters, family housing, in-port services, household goods offices, morale, welfare and recreation facilities, postal facilities, religious facilities, navy exchange facilities

Logistics provides the physical means for the organized forces to exercise power. It enables people and their weapons to execute their operations, providing:
Availability: Ability to provide functional operating equipment, and the required levels of supplies and services

Maintainability: Ability to support weapon systems effectively and efficiently throughout their life cycle, to include spare parts support, technical documentation, maintenance and repair capabilities, and cost information systems and management tools, equipment, communications and ADP support

Mobility: Ability to move people, weapon systems, and their supporting supplies and services, to any place in the world, quickly and efficiently

Sustainability: Ability to maintain levels of support over extended periods of time, to allow people and weapons systems to continue to operate at the highest levels of readiness, equipment and communications

Secure and timely access to a wide range of cross-functional planning, asset, technical, and management data is necessary. For example, weapon system data is used to define the configuration of support packages. Technical drawings are used to facilitate rapid support and manufacturing. Maintenance and wartime planning factors are used to determine the range and depth of support requirements. Maintenance factors also are used to evaluate repair capabilities. Finally, asset information is used to determine materiel availability.

3.4.2 Activities at Specific Operation Points

During phase 1-2 (steady state peacetime operation), logistics must support training, readiness, and operations of the Navy and Marine Corps operational commands. Logistics activities at this time are characterized as robust, steady, highly distributed, time-critical, outcome driven, readiness related, heavily cross-functional, relevant to all military peacetime responses, and highly dependent on IT to accomplish normal workload.

During surge to one MTW, planning time frames are relatively short, and the logistics response must be rapid. The configuration of the warfighting force may change and the logistics process must respond accordingly. The trend is away from mission scenarios that require massive pre-positioning of personnel, equipment, and supplies and towards better access to information that, with rapid transportation, enables a quick assembly of support and the ability to sustain the warfighting during the conflict. This strategy requires total asset visibility of materiel and in-transit visibility of materiel as it moves through the supply pipeline.

The planning is continuous with units, people, and materiel being mobilized, employed, and deployed simultaneously and iteratively. Logistics emphasis is on ensuring units are fully ready at deployment, and then on transportation - movement of people, materiel, and units. This would include mobilization, that is the movement of reservists from point of origin to point of destination. Navy movement of people centers on individual reserve mobilization, e.g., doctors, translators, cargo handlers, etc. Unit moves are pre-organized for a particular task and mission, e.g., Seabee battalion. The bulk of the Navy's operating units are already deployed. Logistics activities at this time can be characterized as robust, highly distributed, extremely time-critical, outcome driven, readiness related, heavily cross-functional, with significantly increased workload volumes, and highly dependent on IT to accomplish all workload.

During surge to the second MTW, the logistics activities described in the single MTW will be multiplied by a factor of two and characterized as high-volume, full performance around-the-clock operations that are highly distributed, outcome driven, readiness related, heavily cross-functional, and highly dependent on IT to accomplish all workload.

Redeployment operations require an equally intense time of communications in support of materiel movement and replenishment, and personnel movement. During this phase, Logistics activities can be characterized as gradually returning to steady state; the pace will be greater than usual as supply levels are brought back to normal peacetime volumes, and will gradually taper back to the level of normal operations. Activities will continue to be highly distributed, time-critical, outcome driven, readiness related, heavily cross-functional, and highly dependent on IT to accomplish all workload.

3.4.3 Specific IT Support

Many logistics activities place unusually high stress on the information infrastructure during peacetime operations. Maintenance activities such as shipyards, aviation depots, intermediate maintenance activities are heavily information intensive. There is a requirement for real-time, robust information exchange among organizations, both at the depot level and intermediate level maintenance activities, as well as the on-site organizational level maintenance at the squadron or on the ship or submarine requiring reach back to centrally maintained information repositories. Other logistics activities such as Supply are similar.

During a response to any increased op tempo surge, IT planners must heavily emphasize and factor logistics deployment strategies into the IT architecture because of their significant impact. Specifically, Logistics agencies

will begin a significant surge on IT architecture as planners respond to developing pre-planned deployment strategies. Specifically, as soon as a planning order is published security safeguards must increase in anticipation of probes on the system by parties attempting to ascertain unit movements by monitoring increased logistical information flow. Network management services will increase in response to increased usage of WAN, E-mail, LAN and Switched Voice (to be superseded by Voice on Demand (VOD)). The local help desk function services are critical to this phase as commanders and planners are requesting/producing data in response to CINC queries. This service MUST be a 24 hr per day/7 day per week function that is responsive to the user worldwide in any time zone. As planners/units search for data/respond to queries, the usage of Web pages/Newsgroups will increase. Data warehousing will be utilized extensively as units pull data to flesh out plans and develop loads for ships. Connectivity requirements via cell phone, VTC and SIPERNET increase dramatically as the logistical plan is adjusted, implemented and tracked between CINCS, DoN HQ and deploying units throughout these phases. Electronic Data Interchange (EDI)/Electronic File Transfer (EFT) use will increase beginning in phase 2 as contracts are let for commercial carriers during deployment.

During the surge to one MTW, Requirements for increased security precautions will continue from the end of phase 2 into the start of deployment during phase 3 due to anticipated actions from parties attempting to discern movement through force deployment planning and execution. Requirements will ramp up significantly for IT services at Pier locations in support of units reporting through automated systems. Increased quantity of organizational message traffic will also burden the system as ships and deploying units file non-automated reports through AUTODIN and Naval Message traffic. Remote Telephone Access (RTA) will increase as deployment personnel link into garrison accounts to access data files and documents. As reserve forces flow into vacated locations, the requirement for system training and the development of revised Domain/Directory services arise.

Upon commencement of hostilities/employment during one MTW, training and directory services will decrease as reserve forces are now in place. The requirement to support and sustain the force will expand the use of LAN, Switched Voice/VOD and portable SatCom. Deployed forces "reach back" to vendors/providers in CONUS using IT architecture to ensure continued re-supply of stores. Continued usage by logistics planners are in evidence as initial notification of MTW 2 start the pre-deployment preparations and tax the system for data.

As MTW 2 deployment begins, the increased IT services usage is apparent. Deployed units continue to report and are requesting re-supply through the system while new units are accessing the system to report their deployment status. Organizational Messages increase as non-automated reports are submitted. Unit movements and strength reports utilize SIPRNET and WAN as information is processed using E-mail, Remote phone access and cell phone/pagers.

Following replacement of forward deploying units with reserves and these are trained up with new directories and domains established, a significant decrease in contractor training and domain management following phase 5 will be realized. Requirements for deployed units to maintain connectivity while in austere environments will increase utilization of EDI/EFT for vendor/contracting support of the forces.

As forces begin preparations for redeployment the requirements for increased transfer of data to HQ in CONUS will ramp up. Services to maintain the IT will be required as services and commands organize and execute the redeployment phase.

The top six services (Security, Enterprise Network Management, Help Desk, Wide Area Network Connectivity, Base Area and LAN Services, and Video Teleconferencing) are displayed based upon their Services Impact evaluation performed by stakeholders. The graphical representations are shown in Figure 21. The supporting data is provided in Table 20. The stress on the NMCI occurs during one and two MTW for all services, in fact, Logistics exhibited the most pronounced stress increase of the operational/functional activities.
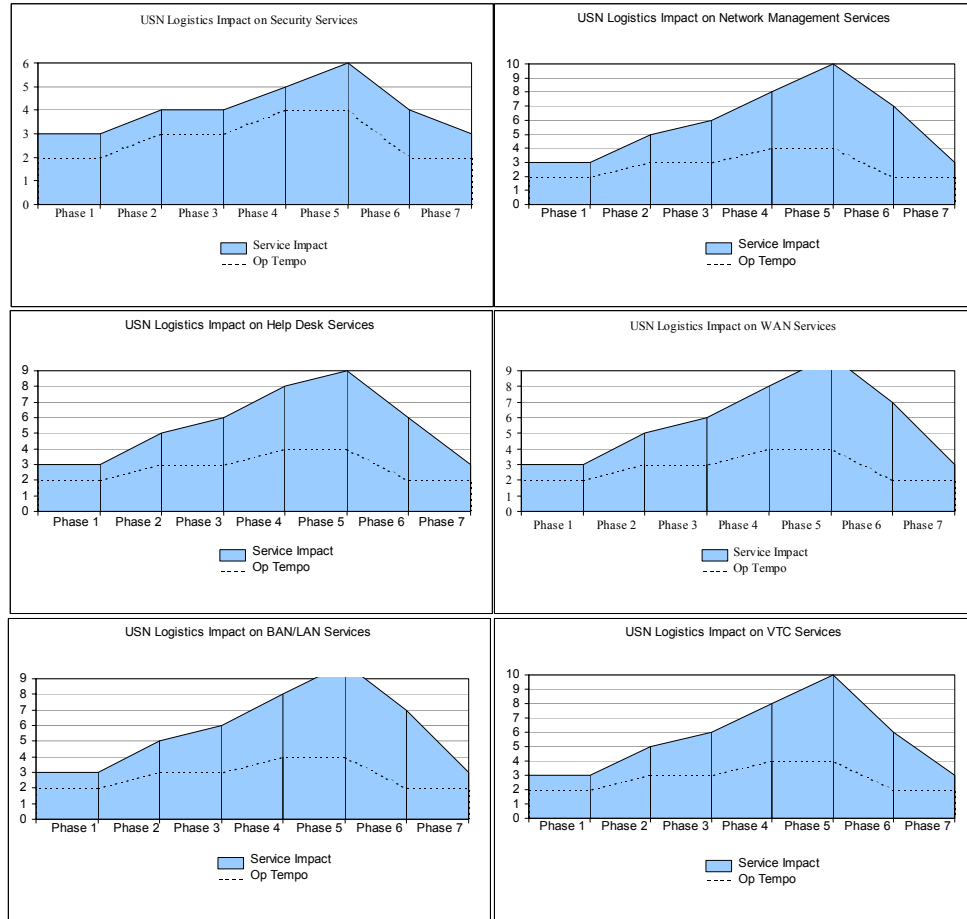
Figure 21. Individual Service Impacts for Logistics and Infrastructure

The operational/functional IT managers estimated stress data for the list of 13 NMCI services introduced in chapter 2. The data includes the six graphically depicted above plus seven others. The complete set of data is presented in the NMCI Services Impact Worksheet below.

	Phases						
Network Services	1	2	3	4	5	6	7
Security Services (firewalls, intrusion detection, availability, encryption)	0	1	0	1	1	-2	-1
Wide Area Network Connectivity (access to DISN (SIPRNET and NIPRNET), commercial WAN, Internet) (includes capacity, functionality, and assurance)	0	2	1	2	2	-3	-4
Base Area and Local Area Network Services (voice, video and data) (end-user to WAN POP; assumes classified and unclassified) (includes availability, capacity, functionality, and assurance	0	2	1	2	2	-3	-4
Desktop Hardware and Software (provisioning/ relocating of end user desktop suites)	0	1	0	1	1	-2	-1
Help Desk and Technical Support (touch labor, support to users)	0	2	1	2	1	-3	-2
Enterprise Network Management (includes performance management, directory, domain name system, connectivity or accounts adds/moves/ deletes, VPN support, systems integration, configuraton management, capacity planning (includes classified and unclassified)	0	2	1	2	2	-3	-4
Organizational Messaging (AUTODIN, DMS)	0	2	1	2	2	-2	-5
Email (capacity, availability, classified and unclassified)	0	2	1	2	2	-2	-5
Web Services (web enabled applications hosting, search engines, news group services, web site hosting)	0	2	1	2	0	-3	-2
Remote Telephone Access	0	2	1	2	2	-3	-3
Video-teleconferencing (including management and set up of sessions)	0	2	1	2	2	-4	-2
Telephony (switched voice, voice over data, cellular service, pagers)	0	1	1	1	1	-1	-2
Training (system administrator, end user training)	0	0	1	0	1	-2	0
Summary Value	3	2	1	2	2	-3	-4

Table 20 Navy Logistics

The Logistics functional area mission requirements just described, during steady state and through the phases of MTW, have varying priorities as determined by the command authority. The IT services that support these mission requirements similarly have priorities that closely mirror the mission priorities. Those priorities must be reflected in the performance measures by which the service provider solutions are evaluated, and by which the ultimate NMCI service is measured. The Logistics functional area has identified the following priorities along with their corresponding performance measures.

Priority	Required IT	Performance Measures
1	High reliability	Attack blocking and detection, system integrity, data corruption, network disaster
2	Ease of access by authorized users	Network availability (subnet, host, applications)
3	High degree of security	Attack blocking and detection, data corruption, virus and physical attacks
4	Robust surge capacity	Throughput, processing, storage; Adequacy (responsiveness to needs)
5	Interoperability with other technologies (e.g. Smartcard)	Seamless exchange of data among DoD/Joint partners

Table 21 Functional Area Performance Measures

Given the stated IT support required to support Logistics, the measures of effectiveness described in Table 21 provide the specific areas that must be captured by the NMCI services to ensure satisfactory performance of functional mission requirements. The area of surge is certainly one concern for manpower and personnel because of the large delta between peacetime requirements and potential MTW scenarios. Technologies like SmartCard and SmartBase are potentially a large part of any future logistics solution because of their ability to dramatically increase the scope and responsiveness of services while at the same time reducing the cost of providing those services. Joint interoperability will always be an important area logistics.

3.4.4   Supported Systems

There are currently 471 logistics systems at major ammo/ordnance logistics centers, naval aviation depots, shipyards, regional maintenance sites and other ashore facilities. Logistics functional users need sustainable electronic access to major primes such as Newport News Shipbuilding and Drydock Co.; major inter-service repair sites – such as Corpus Christi Army Depot (CCAD) for the SH-60); and Defense Logistics Agency (DLA). The information systems supporting the logistics functions are compartmentalized, primarily in mainframe or other stand-alone computer environments. Although Navy has attempted to realign some logistics activities along weapon system lines, the traditional functional orientation remains prevalent.

The Navy and Marine Corps have adopted Joint Engineering Data Management Information and Control System (JEDMICS) as the repository for technical data (drawings, technical manuals, and configuration databases). JEDMICS contains over 75 million drawings and is accessed globally on the average of 75 million hits per month. Globally accessing these repositories are customers that rely on this data for activities such as shipbuilding activities, aircraft rework facilities, and intermediate maintenance departments.

Another significant functional system is the (JOPES), a major DoD-wide information system, for CINC development of operational plans. JOPES includes automated tools and a repository for information, the Time Phased Force and Deployment Data (TPFDD) which describes unit related moves (e.g., carrier battle groups), and non-unit related sustainment (e.g., people and materiel required to sustain the force). These are distributed across the enterprise on a client-server architecture, are graphics intensive, and require heavy daily use of large database files.

Other examples of information systems are:

Global Combat Support System (GCSS), which provides valid sustainment information to the Supported Unified CINCs (e.g., CINCEUR). The GCCS- and GCSS-related functional enterprise systems number in the 100s. Examples of these (most stressful) would include:

Uniform Inventory Control Point (UICP) which is Navy's primary system for material requirement determination, procurement and asset positioning.

Transportation Coordinators Automated Information for Movement System (TCAIMS) which is a joint system for tracking and managing movement of personnel and equipment

Conventional Ammunition Information Management System (CAIMS)

Retail Ordnance Logistics Management System (ROLMS) for managing munitions

3.4.5 Geographic Information

The distribution requirement for logistics systems data varies widely according to functions within logistics. For instance, the Base Operating Support functions include approximately 20 consolidated functions within the CONUS geographical regions and each operates over a Metropolitan or Campus Area Network. The Base Operating Support (BOS) functions require interoperability to support integrated and inter-related functions, such as real property management, base security, administrative support, procurement, and transportation.

Other logistics systems data must be shared across the wider enterprise, such as shipyards that exchange heavy data requirements (publications and drawings) between 14 widely geographically separated sites. Asset visibility for ordnance, particularly with precision guided munitions, will intensify the requirement for bandwidth.

Heavy stress on the NMCI services is expected at primary supply organizations (located at: Mechanicsburg, Pennsylvania; Philadelphia, Pennsylvania, Norfolk, Virginia; Jacksonville, Florida; San Diego, California; Bremerton, Washington; Pearl Harbor, Hawaii; and Yokosuka, Japan), at the ship yards (located at Norfolk, Virginia; Portsmouth New Hampshire; Pascagoula, Mississippi; Bremerton, Washington; Bath, Maine; and Groton, Connecticut, Pearl Harbor, Newport News Shipbuilding), and at the naval aviation depots (located at Jacksonville, Florida; Cherry Point, North Carolina; and San Diego, California). Naval aviation depots (NADEPS) are located at Jacksonville, Florida; Cherry Point, North Carolina; and San Diego, California.

As an indication of user locations, the numbers of NMCI users at each of the claimancy sites is indicated in Table 22. The total for Logistics and Infrastructure reflects a wide geographic dispersion of activities located across CONUS.

Navy Concentration Area	DRM Designation	Logistics			PC's
		Military	Civlitan	Total	
Hampton Roads	Tidewater	5,518	12,894	18,412	20,000
Great Lakes	NA	7	58	65	78
New Orleans	NA	73	214	287	300
New England	Groton	49	216	265	300
Pensacola	NA	11	239	250	300
Texas	NA	438	97	535	600
Charleston SC	Charleston	102	835	937	1100
Cherry Point		40	3,500	3,540	2000
Jacksonville	Jacksonville	1,096	5,386	6,482	7700
Washington DC	NA	54	1,002	1,056	1267
Pearl Harbor	Pearl	1,401	1,881	3,282	3930
Phil, PA		216	4,942	5,158	5600
Puget Sound	Puget Sound	1,768	10,308	12,076	14490
San Diego	San Diego	3,181	3,339	6,520	7820
Ventura County	NA	756	5,891	6,647	7970
		14,710	50,802	65,512	73,455
* Parametric Analysis used to estimate numbers of PC's					
** about 50% of NADEP employees do not have access to computers					

Table 22 Logistics and Infrastructure Demographic Data (6/30/99)

3.5 TRAINING AND EDUCATION - NAVY

Training is one of the seven operational/functional activity areas used in this DRM to describe how the Navy performs its mission. The intent of this section is to provide a brief overview of the mission, people, and locations that relate to this function, leading to the real objective - a description of the IT infrastructure that must be in place to support it. The elements of the IT description will characterize how the work activities of this function place demands or stress on the IT infrastructure (NMCI) during a hypothetical set of potential environments in which the Navy must be prepared to operate, as described in chapter 2. The graph in Figure 22 is provided as a way of introduction, showing the notional stress that Training could be expected to place on NMCI during peacetime and during increases in operational tempo. The following provides the supporting detail.
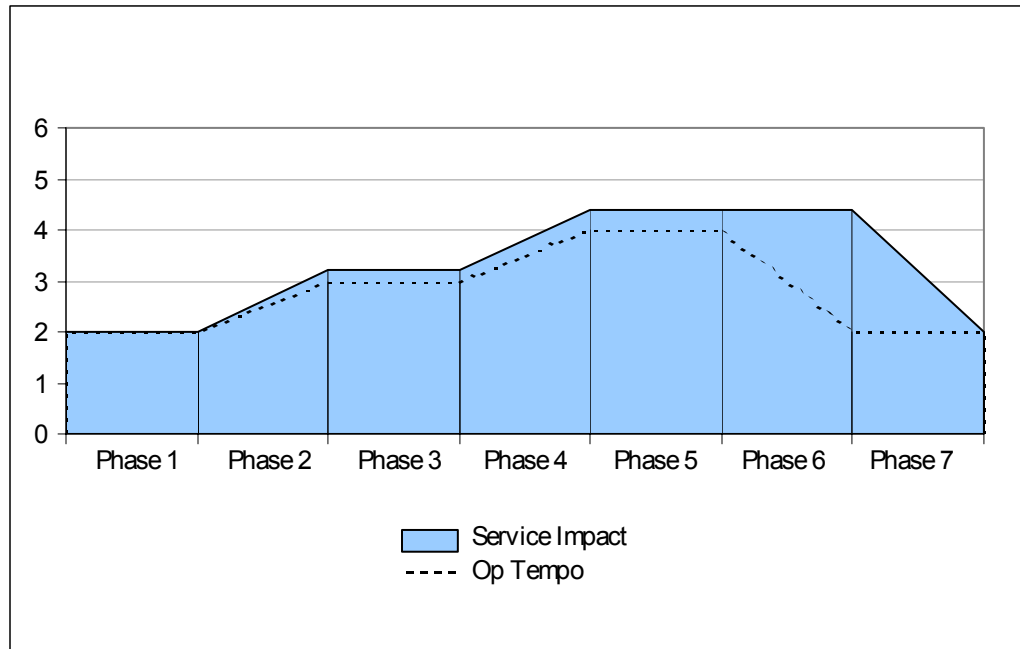
Figure 22. Training Impact on NMCI Services

3.5.1 Functional Description

The CNET is the dual hat Director of Navy Training, an echelon one command under the Chief of Naval Operations (CNO) and is one of six echelon two commands in the CNO Manpower and Personnel Training Information Systems (MPT) community. CNET provides standardized, high quality training, resource management and training activity level operations for the Naval Education and Training Command (NAVEDTRACOM) worldwide. NAVEDTRACOM consists of the following:

- 3 echelon three commands – Naval Education and Training Professional Development and Technology Center (NETPDTC), Chief of Naval Air Training (CNATRA), and Commander, Naval Education and Training Center (NETC)
- 81 echelon four commands/activities
- 29 detachments
- 70 Naval Reserve Officer Training Corps (NROTC) units
- 435 Naval Junior Reserve Officer Training Corps (NJROTC) units
- 5 Departments of Naval Science.

On any given day (FY98 data), there are 42,500 military, 160 civilians, and 450 foreign military students in training. There are 75,800 'A' school (initial training) students and 37,800 'C' school (advanced) students training yearly. The major training locations are San Diego, CA, Norfolk, VA, Great Lakes, IL, Newport, RI, Pensacola, FL and Corpus Christi, TX. CONUS and Hawaii training facilities staff sizes are identified in Table 2324.

AREA	No MILPERS	No CIVPERS	Total
Pensacola	3,291	2,246	5,537
Corpus Christi	584	692	1,276
Great Lakes	2,431	531	2,962
San Diego	1,815	211	2,026
Groton	655	18	673
Newport	414	76	490
Bangor	423	51	474
Pearl Harbor	232	26	258
Norfolk	2,120	312	2,432
Meridian	521	299	820
Kingsville	470	263	733
Charleston	1,085	2	1,060
Kings Bay	322	43	365
Other	4,013	411	4,424
Total	18,349	5,181	23,530

Table 2324 NAVEDTRACOM Staff Personnel Distribution

(FY98 data; Training activities includes all CNET training and training support activities, including base operations support)

3.5.2   Activities at Specific Operation Points

During steady state operation, all training in support of the fleet is provided during phase 1-2 (steady state peacetime operation). This includes recruit basic training, advanced skills training, officer accession training, graduate, voluntary education, enlisted rating advancement and remedial training support. Training and education scenarios include traditional classroom training as well as scenarios requiring IT support (VTT, Web-based training, Computer Based Training (CBT), Interactive Course Ware (ICW), etc.) both on shore and aboard ship.

During a surge to one MTW, activities at operation phase 2-3 would experience a significant increase in the number of personnel requiring training to support the MTW effort. Because of the recent downsizing of military forces, it is probable that a draft effort to increase the size of the military population would require the expansion of the number of training classes required. This expansion would increase the use of automated information systems and network support required in the execution and maintenance of training efforts particularly in the basic and advanced training arenas.

A second MTW effort would increase the demand on the number personnel requiring training to support two geographic locations and the IT support needed to facilitate that training. During a surge to two MTW, there is a continual need for the training of these additional personnel and the support required for that training remains constant during this phase. During redeployment, all training would begin to return to normal steady state.

3.5.3   Specific IT Support

IT support for major training systems includes LAN/WAN support and Internet connectivity. The NAVEDTRACOM has an established enterprise network that connects its activities to each other and to the Internet in support of systems that are both internal and external to the training mission. Twenty four by seven (24 x 7) support is required to provide maximum integration for unclassified information, and to facilitate E-mail, schoolhouse support, Internet access, etc. to training sites worldwide.   Current operational and technical support varies from 1-3 shifts M-F manned, after normal hours unmanned equipment operation, and as required call-back services. System security is in accordance with DoD and SECNAV directives to reduce the risk and magnitude of harm that could result from the misuse, destruction, unauthorized access to or modification of information in Federal computer systems. Network security is firewall protected.

During a surge to one MTW, the war mobilization process requires a significant increase to Naval manning levels. The draft process is re-instated which also causes a significant increase to recruit in-processing and the associated training. This training "surge" continues to ripple through various subsequent levels of the training pipeline. Systems

network traffic expands to accommodate the demand for inter-systems information. Programs of Record which support the Naval Recruit Command (NAVCRUITCOM), the Military Entrance Processing Command (MEPCOM), the CNET, and BUPERS process these additional records through their respective interfaces across the WAN. Increased activity of a hostile nature requires the increase of security measures for all IT support systems. Of special concern is the protection of data relating to the training and transportation of troops and sailors. The mobilization also increases requirement for network delivery of multimedia curriculum that creates a demand for high bandwidth network support 24 hours a day, 7 days a week.

During a surge to two MTW, additional IT support similar to that of phase one would be required to mount an effort in a different arena. If the two war fronts are on opposite fleet areas, a ramp up in the second geographic region impacts network services in that location. Increased manning levels requires additional network support to meet training requirements, accommodate higher demand for inter-systems information processing, and allow processing of additional records across the WAN.

During redeployment, there will be a diminishing requirement for additional services and a return to steady state.

The top six services (Security, Enterprise Network Management, Help Desk, Wide Area Network Connectivity, Base Area and LAN Services, and Video Teleconferencing) are displayed based upon their Services Impact evaluation performed by stakeholders. The graphical representations are shown in Figure 23. The supporting data is provided in Table 25. The most notable stress on NMCI occurs during one and two MTW for Security services.
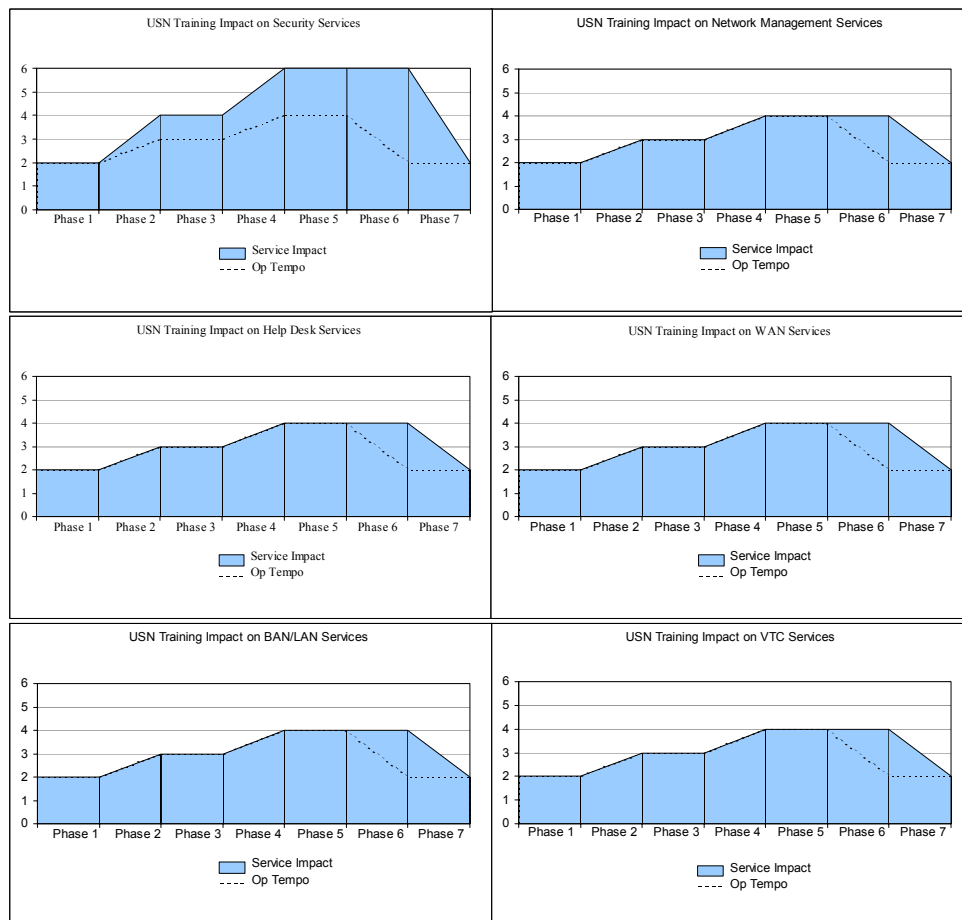
Figure 23. Individual Service Impact for Training

The operational/functional IT managers estimated stress data for the list of 13 NMCI services introduced in chapter 2.The data includes the six graphically depicted above plus seven others. The complete set of data is presented in the NMCI Services Impact Worksheet below.

USN Training

Network Services	Phase 1 Peacetime Ops	Phase 2 Deploy MTW1	Phase 3 Employ MTW1	Phase 4 Deploy MTW2	Phase 5 Employ MTW1/2	Phase 6 Redeployment	Phase 7 Peacetime Ops
Security Services: firewalls, intrusion detection, availability, encryption.	Steady State	2	0	2	0	0	-4
Wide Area Network Connectivity: Access to DISN (SIPRNET & NIPRNET); commercial WAN; Internet. Includes capacity, functionality, and assurance.	Steady State	1	0	1	0	0	-2
Base Area and Local Area Network Services: Voice, video and data; End-user to WAN POP; Assumes classified and unclassified; Includes availability, capacity, functionality, and assurance.	Steady State	1	0	1	0	0	-2
Desktop Hardware and Software: Provisioning / relocating of end user desktop suites.	Steady State	1	0	1	0	0	-2
Help Desk and Technical Support: Touch labor & support to users.	Steady State	1	0	1	0	0	-2
Enterprise Network Management: Includes perf mngt, directory, DNS, connectivity or accounts (adds/moves/ deletes), VPN spt, sys integration, config mngt, capacity planning; class and unclass.	Steady State	1	0	1	0	0	-2
Organizational Messaging: AUTODIN & DMS	Steady State	2	0	2	0	0	-4
Email: Capacity, availability, classified and unclassified.	Steady State	1	0	1	0	0	-2
Web Services: Web enabled applications hosting; search engines; news group services; web site hosting.	Steady State	1	0	1	0	0	-2
Remote Telephone Access	Steady State	1	0	1	0	0	-2
Video-teleconferencing: Including capacity, availability, management and set up of sessions.	Steady State	1	0	1	0	0	-2
Telephony: Switched voice, voice over data, cellular service, pagers.	Steady State	2	0	2	0	0	-4
Training: System administrator, end user training.	Steady State	1	0	1	0	0	-2
Weighted Average of Impact on NMCI Services. First cell is Steady State SLI.	2.00	3.20	3.20	4.40	4.40	4.40	2.00

Table 25 Training

The Training functional area mission requirements just described, during steady state and through the phases of MTW, have varying priorities as determined by the command authority. The IT services that support these mission requirements similarly have priorities that closely mirror the mission priorities. Those priorities must be reflected in the MOEs by which the service provider solutions are evaluated and by which the ultimate NMCI service is measured. The Training functional area has identified the following priorities along with their corresponding Performance Measures shown in Table 26.

Priority	Required IT Services	Perfromance Measures
1	High Reliability	Minimal signal points of failure Dual hardware with fail over capability Dual modules (i.e., power supply) UPS for critical equipment Dual-homed circuits 24x7 monitoring/callback
2	High degree of security	Firewalls, intrusion detection and blocking, virus protection, physical protection
3	Robust network capacity	Adequate bandwidth to provide timely remote application processing, file downloads, timely email/DMS transmission
4	Ease of access by authorized users	Robust 24 x 7 help desk/support, application integration support
5	Interoperability with other technologies	Seamless data exchange without compromising security

Table 26 Functional Area Performance Measures

3.5.4 Supported Systems.

CNET mission critical programs of record operate on the NMCI executing ORACLE client/server architecture. Databases located in Pensacola, New London, Norfolk, Kingsbay, Great Lakes, San Diego and Bangor are synchronized across the network using ORACLE's symmetrical replication tools, SQL, etc. Transactions generated at the schoolhouses update the corporate database located in Pensacola as they occur so that the corporate database reflects an accurate picture of training status within seconds. The CNET corporate training database also interfaces dynamically with the BUPERS Navy Training Reservation System (NTRS) located in Chambersburg, so that detailers can make confirmed reservations for training "seats" throughout the day before cutting orders. The following systems are not a comprehensive list of CNET supported/operated systems, however, they represent the geographic range, scope and complexity of the network support that will be required of NMCI.

- The Standard Training Activity Support System (STASS) and Navy Integrated Training Resources Administration System-II (NITRAS-II) are Navy-wide systems that manage and support Navy military training. These systems provide schoolhouse support including all aspects of personnel/manpower and training management; instructor utilization, classroom testing and grading support; equipment/supply support; library support; recruit accession and training; quota and pipeline management; course scheduling; curriculum tracking; both on-line and hard copy reporting capability; and decision support capabilities for every training activity throughout the NAVEDTRACOM. They are designed to provide one time, single source data collection using DoD/DoN standard data elements in an open systems ORACLE RDBMS LAN/client server environment. These are two of the three systems designated by CNO/BUPERS as core systems for the Integrated Navy Training Requirements and Planning Database (INTRPD) strategy. STASS interfaces are as follows:

NAWC-TSD, Orlando, FL: AIM II

All NAVEDTRACOM Training Activities and many Non-NAVEDTRACOM Training Activities (BUMED, AEGIS, Reserves)

NRISO, New Orleans, LA: SDS, NTRS, NSIPS (In Development)

MEPCOM Great Lakes, IL: MIRS

DMC, Washington DC: RAPIDS

CNRC, Washington DC: PRIDE

ASC/YTG, Wright Patterson AFB, OH: JPATS-TIMS (In Development)

- NITRAS II is the only official source of training statistical data for formal Navy Training. NITRAS II manages and supports the Navy training effort by collecting, compiling and providing student and training information. A key interface with NITRAS II is STASS which provides standardized comprehensive day-to-day progress of student training. Other interfaces include: NTRS, CNRC, NTOMS, BNA, SMART Transcript, TOURS, DMDC, CAN, TRRCS/SIP, and NTMPS

> OWNER: Chief of Naval Operations (CNO N7).
> CORE SYSTEMS DATA EXCHANGE: NITRAS II exchanges course, pipeline, class, student, and quota information with STASS and NTRS.
> KEY INTERFACES WITH NITRAS II: STASS provides standardized comprehensive day-to-day integrated automated classroom support.
> OWNER: Chief of Naval Education and Training (CNET).
> CORE SYSTEMS DATA EXCHANGE: STASS exchanges course, pipeline, class, student, and quotas information with NITRAS II.

NTRS manages training reservations for the Navy.

> OWNER: Bureau of Naval Personnel (BUPERS).
> CORE SYSTEMS DATA EXCHANGE: NTRS exchanges course, pipeline, class, student, and quota information with NITRAS II.

Navy Military Personnel Distribution System (NMPDS) generates orders to fill Navy billets. NMPDS includes Enlisted Assignment Information System (EAIS), Officer Assignment Information System (OAIS) and Computer Enhanced Detailing and Distribution (CEDAD).

> OWNER: Bureau of Naval Personnel (BUPERS).
> DATA EXCHANGE: NMPDS exchanges student, class schedule, availability, student itinerary, and class roster information with NTRS and NITRAS II.

Navy Training and Quota Management System (NTQMS) is used to allocate the training classroom seat inventory for specific types of students in specific courses.

> OWNER: Chief of Naval Education and Training (CNET).
> DATA EXCHANGE: NTQMS exchanges booking history and quota information with NTRS. NTQMS exchanges course, pipeline, class schedules, annual plans and quota information with NITRAS II.

Training Requirements Resource Control System (TRRCS) projects out year training requirements.

> OWNER: Bureau of Naval Personnel (BUPERS).
> DATA EXCHANGE: TRRCS exchanges course, pipeline, attrition, and training requirements information with NITRAS II. TRRCS exchanges Training Requirements with TOURS.

Training Oriented Users Resource Scheduling (TOURS) Annual Course Scheduler (ACS) is a long range curriculum based planning system that produces class schedules, optimizes resources to meet student plans and allows for "What If" scenarios.

> OWNER: Chief of Naval Education and Training (CNET).
> DATA EXCHANGE: TOURS exchanges class information with NITRAS II. TOURS ACS exchanges Training Requirements with TRRCS.

Navy Training Management and Planning System (NTMPS) is a long-range planning system (up to 20 years) used by senior training management personnel. NTMPS integrates ship combat control planning data with data retrieved from 13 Navy databases in order to project future Navy manpower, personnel and training requirements.

> OWNER: Chief of Naval Education and Training (CNET).
> DATA EXCHANGE: NTMPS receives course, pipeline and student information from NITRAS II.

Personalized Recruiting for Immediate and Delayed Enlistment (PRIDE) is used to classify and select recruits for a specific rating and to make Recruit "A" school reservations.

> OWNER: Navy Recruiting Command (CNRC).
> DATA EXCHANGE: PRIDE exchanges Delayed Entry Program bookings and Recruiting goals with NTRS.

Advanced Distributed Learning (ADL) has been mandated by the Secretaries of the Military Departments. This strategy is being designed to use existing and emerging network-based technologies to support the creation and maintenance of reusable learning content and promoting collaborative training efforts throughout the Department of

Defense to military personnel anytime, anywhere. This training will reach hundreds of thousands of personnel around the world. This use of multimedia curriculum creates a demand for high bandwidth network delivery support 24-hours a day, 7 days a week.

- The Officer Programs Management Information System II (OPMIS II), Navy Junior Reserve Officer Training Corps (NROTC) and Navy Junior Unit Management System (NJUMS) support the management and administration of the NROTC/NJROTC units throughout the United States. There are over 59,700 students, instructors, scholarship candidates, inventories and test item banks supporting 435 high school NJROTC units and 125 colleges and universities nationwide users of the OPMIS II system including nearly 70 NROTC units, CNET, DFAS, the Naval Academy and NETPDTC. OPMIS interfaces with numerous external systems including DFAS Cleveland, BUPERS, the Naval Academy, the DoD Medical Examination Review Board, the Naval Personnel Research and Development center, and others.

- Navy Campus Management Information System (NCMIS) supports the administration of funds and statistical analysis for four voluntary education programs (Tuition Assistance (TA), Program for Afloat College Education (PACE), Functional Skills (FS) and the Marine Corps Tuition Assistance Program) for 175 users at 96 sites throughout the worldwide Navy Campus and Marine Corps network.

3.5.5 Geographic Information

The above systems are connected via the CNET enterprise network with high student population areas located in San Diego, CA, Norfolk, VA, Great Lakes, IL, Kings Bay, GA, Pensacola, FL, Pearl Harbor, HI, Groton, CN, Silverdale, WA, Jacksonville, FL, Newport, RI, Virginia Beach, VA, Mayport, FL, and Port Hueneme, CA.

NETPDTC Customer Support Centers are located in Corpus Christi, TX, Great Lakes, IL, Norfolk, VA San Diego, CA, and Pensacola, FL. NETPDTC units are located in Bangor, WA, CNET HQ, Pensacola, FL, Kings Bay, GA, New London, CN, and Newport, RI.

3.6 BASE OPERATING SUPPORT - NAVY

BOS is one of the seven operational/functional activity areas used in this DRM to describe how the Navy performs its mission. The intent of this section is to provide a brief overview of the mission, people, and locations that relate to this function, leading to the real objective - a description of the IT infrastructure that must be in place to support it. The elements of the IT description will characterize how the work activities of this function place demands or stress on the IT infrastructure (NMCI) during a hypothetical set of potential environments in which the Navy must be prepared to operate, as described in chapter 2. The graph in Figure 2425 is provided as a way of introduction, showing the notional stress that BOS could be expected to place on NMCI during peacetime and during increases in operational tempo. The following provides the supporting detail.
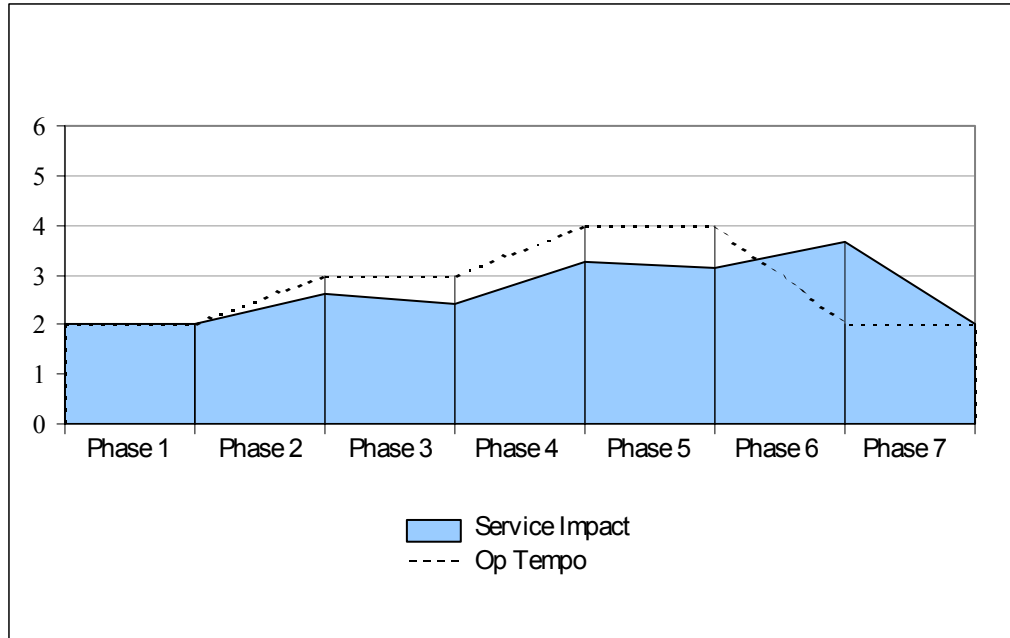
Figure 2425. BOS Impact on NMCI Services

3.6.1 Functional Description

BOS provides the large segment of functions needed to deploy and support the fleet. Over 50 diverse functions are categorized under seven core BOS business categories and account for the jobs performed by a large percentage of the personnel who work at the Naval bases throughout CONUS and Hawaii. The business categories and functions are consistently applied at each of the Navy installations, under the guidance of the Navy's Shore 2000 Regionalization Effort. Shown in Table 27 are the core business areas with a listing of their most significant functions.

Core Businesses	Airfield Support	Other Mission Support	Community Support	Facility Management	Public Safety	Command Support
Air Operations	Port Services	Miscellaneous Support	Morale Welfare Recreation	Utilities	Force Protection	Command
Airfield Logistics	Berthing	Military Banking	Shelter/Subsistence	Facility Maintenance	Fire and Safety	Chaplain
Aviation Fuel	Port Logistics	Mobilization	Family Service Center	Building Services		Legal
Ground Electronic	Port Operations	Health Care Support	Child Development Program	Public Works		Public Affiars
Line Facilites	Tugs and Craft	Museums	Family Housing Support	Transportation		Postal
Cargo Handling	Degaussing	Retail Service Support	MILPERS Services	Environmental		MILPERS Management
Crash & Rescue	Sea-Air Rescue	Commissary Support		Grounds Maintenance		Resource Management
Terminal	Spill Response					Supply
Weapons						Information Services

Table 27 Installation Core Business Model

Many of the BOS services are performed, at every base and region. Some are mission specific and are only provided at specific bases (e.g., pier services at Naval Stations, air operations at NASs). The Shore Base 2000 strategy has consolidated and regionalized the BOS services in each fleet concentration area. There is a single manager for every function/core service and the managers all report to a single Regional Commander charged with providing those services. For example, all of the bachelor quarters at the 9 bases in the San Diego area are managed by a single manager, and that manager reports to the CINCPACFLT Regional Commander.

The geographic concentrations along with the number of jobs included under BOS are shown in Table 28. The Shore Base 2000 implementation was begun in 1998 and the consolidated, regionalized management structure was scheduled to be fully implemented during year 2000. The prevalence of BOS billets in the Navy and Marine Corps is apparent from the significant numbers of billets in Tidewater, San Diego, and Hawaii.

CONUS and Hawaii	Base Operating Support		
	Military	Civilian	Total
Hampton Roads	6,299	2,423	8,722
Great Lakes	273	1,181	1,454
New Orleans	154	462	616
New England	326	729	1,055
Pensacola	512	1,743	2,255
Texas	708	1,007	1,715
Charleston SC	181	578	759
Jacksonville	2,224	2,418	4,642
Washington DC	1,153	1,957	3,110
Pearl Harbor	1,258	1,045	2,303
Puget Sound	1,861	1,733	3,594
San Diego	3,743	4,105	7,848
Ventura County	21	0	21
Sub Total	18,713	19,381	38,094
Other	5880	7761	51735
Total	24,593	27,142	89,829

Table 28 Numbers of BOS Jobs by Geographic Concentration Area

BOS functions are stable, tend to be repetitive in function, and are performed largely by government civil service, with some military billets, particularly on the Command Support functions.

Selected of these functions are essential and affect life and property, such as air operations, port services, fire and safety, and utilities. Communications for these is a fundamental requirement. Each depends, in some cases to a great extent, on reliable, available, and effective communications services. Many of the BOS services require communications with external organizations (e.g., Supply with Naval Logistics organizations, the DLA, and multiple commercial vendors for sustainment and replenishment of products and materials).

The individual functions of the BOS infrastructure tend to be highly independent. For a given base, each of the functions may reside in a different building. Under regionalization, common functions, e.g., bachelor quarters, are high integrated with one another across the bases within a region.

The services provided at a base tend to be highly localized and performed for the military mission functions, those civilian and military and dependents living on base, and the active duty and retired military (and their dependents) residing off-base.

3.6.2   Activities at Specific Operation Points

During Steady State operation, there is a wide array of base infrastructure, personal services, quality of life, and security services that occur with notable spikes in service occurring prior to and incident to deployment of ships and aircraft. The shipboard fleet operates on a deployment schedule that normally has one-third of the ships deployed, one third training off CONUS, and one-third in port. The aircraft squadrons are in similar rotations, and a given hangar may see its squadron occupants change multiple time during a year. Also notable are the BOS required by ships in port and by at-home aircraft squadrons, particularly as they relate to training. Ships tend to go in and out on local exercises, and aircraft squadrons train heavily during their at-home training cycle.

During a surge to one MTW, the CONUS/Hawaii bases that are nearest the conflict will obviously experience the greatest impact. Many of the at-home ship/aircraft training cycles will be disrupted and 50-90 percent of units may deploy. There will be a significant surge of activity (e.g., supply, fuel farms, weapons) as ships, squadrons, and personnel prepare to deploy. Activity will increase to a 24X7 tempo, security will be increased, and the tempo of services to prepare and squadrons to get underway will be frenetic. The accompanying support operations necessary to support replenishment, unit and personnel movement, and reserve movement will be extraordinary. Command services (e.g., disbursing, legal, chaplain) will also increase notably. Upon deployment, the loading on BOS services will drop significantly, unless Reserves are activated and backfill the base. The personnel performing BOS functions will remain at the site.

During a surge to two MTW, approximately 90 percent of all available ships and air squadrons would deploy. A worst case scenario for BOS tempo of operations would be two conflict regions in close proximity, placing great stress on the CONUS/Hawaii bases providing the greatest number of weapons platforms. In a two MTW scenario, all bases will have a significant surge in activity. In some cases, military personnel performing BOS functions may be reassigned to deploying tactical units. In two MTW, the Reserves will most certainly be called up in significant numbers and will backfill at the bases. This will require significant BOS support for training (shipboard and aviation), command services, and facilities (e.g., bachelor quarters).

Redeployment of ships and aircraft to homeports will require a BOS level of effort comparable to the deployment scenario. The deactivation of Reserves and the return of regular forces will heavily load command services. Pier services and air operations will experience a sustained tempo of operations. Supply will be stressed to provide replenishment of parts and consumables. These will require an equally intense time of communication requirements. This will require a number of weeks and perhaps months to recover and return assets and personnel.

3.6.3   Specific IT Support

The IT support for the bases in the Navy and Marine Corps geographic concentration areas will be provided by NMCI. The responsible entity for performance of BOS functions for a particular area is the Regional Commander for that area. The set of IT services for that area must provide to that Base Commander reliable, end-to-end connectivity that supports the wide range of network services required by BOS activities. All BOS activities will rely on NMCI services.

Selected of the BOS services require joint operations with other Services, DoD, and other Government Agencies. Examples include Air Operations who must interoperate seamlessly with the FAA and the METOC, and Pier Operations, who must operate with the Coast Guard and the U.S. Customs. Additionally, both must maintain reliable communications with operational commanders.

The base supply activity is highly reliant on large amounts of interactive data. This data is required for the location of readiness related ship/aviation replacement parts and consumables. The supply community must interoperate with DoD via the DISN, as well Naval supply activities. This data resides on distributed databases throughout CONUS and Hawaii, and has to be available at all times.

Base personnel and financial activities are likewise conducted locally but rely on DoD/DoN enterprise functional systems and distributed databases. These activities are currently performed on desktops and servers relying on primarily on Windows NT. Selected of the enterprise system databases are maintained on servers to include mainframes and metadata repositories (operated by DISA). Currently most applications are client-server based but as technology advances will change to a regional data structure with greater reliance on communications.

At steady state operations, IT operations are characterized for most services as 8X5, with periods of increased demand for data, incident to deployment and redeployment. The complete implementation of regional services is increasing the use of distributed computing across the base/region for BOS services. Help desk services required are 8X5 with periodic increases to 24X7.

At the surge to one and two MTWs, many BOS activities, although significantly increased, do not significantly impact IT. However, many such as supply, personnel, and training would significantly impact IT. Supply and personnel would require a high number of queries and transactions over the wide-area. Training of the reserves would require intensive use of multimedia including Distance Learning.

During redeployment, an increased demand will be made on the NMCI for supply, personnel, and financial communication support.

The top six services (Security, Enterprise Network Management, Help Desk, Wide Area Network Connectivity,

Base Area and LAN Services, and Video Teleconferencing) are displayed based upon their Services Impact evaluation performed by stakeholders. The graphical representations are shown in Figure 26. The supporting data is provided in Table 2930Table 2930. The BOS functions typically place low to moderate stress on the NMCI, both during peacetime and during one and two MTW.
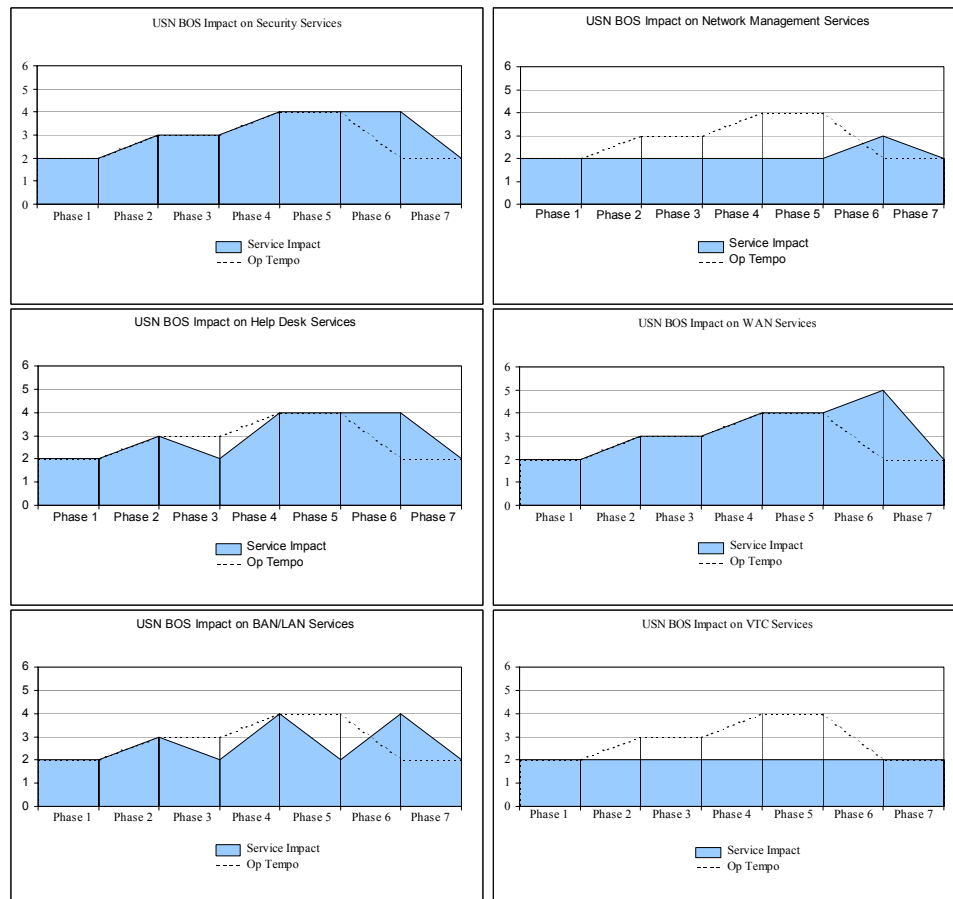
Figure 26. Individual Services Impact for BOS

The operational/functional IT managers estimated stress data for the list of 13 NMCI services introduced in chapter 2.The data includes the six graphically depicted above plus seven others. The complete set of data is presented in the NMCI Services Impact Worksheet below.

USN BOS

Network Services	Phase 1 Peacetime Ops	Phase 2 Deploy MTW1	Phase 3 Employ MTW1	Phase 4 Deploy MTW2	Phase 5 Employ MTW1/2	Phase 6 Redeployment	Phase 7 Peacetime Ops
Security Services: firewalls, intrusion detection, availability, encryption.	Steady State	1	0	1	0	0	-2
Wide Area Network Connectivity: Access to DISN (SIPRNET & NIPRNET); commercial WAN; Internet. Includes capacity, functionality, and assurance.	Steady State	1	0	1	0	1	-3
Base Area and Local Area Network Services: Voice, video and data; End-user to WAN POP; Assumes classified and unclassified; Includes availability, capacity, functionality, and assurance.	Steady State	1	-1	2	-2	2	-2
Desktop Hardware and Software: Provisioning / relocating of end user desktop suites.	Steady State	0	0	0	0	0	0
Help Desk and Technical Support: Touch labor & support to users.	Steady State	1	-1	2	0	0	-2
Enterprise Network Management: Includes perf mngt, directory, DNS, connectivity or accounts (adds/moves/ deletes), VPN spt, sys integration, config mngt, capacity planning; class and unclass.	Steady State	0	0	0	0	1	-1
Organizational Messaging: AUTODIN & DMS	Steady State	1	0	1	0	0	-2
Email: Capacity, availability, classified and unclassified.	Steady State	1	0	1	1	0	-3
Web Services: Web enabled applications hosting; search engines; news group services; web site hosting.	Steady State	0	0	0	0	1	-1
Remote Telephone Access	Steady State	0	1	0	1	0	-2
Video-teleconferencing: Including capacity, availability, management and set up of sessions.	Steady State	0	0	0	0	0	0
Telephony: Switched voice, voice over data, cellular service, pagers.	Steady State	1	0	1	0	1	-3
Training: System administrator, end user training.	Steady State	0	0	0	0	0	0
Weighted Average of Impact on NMCI Services. First cell is Steady State SLI.	2.00	2.60	2.40	3.25	3.15	3.65	2.00

Table 2930 BOS

The BOS functional area mission requirements and priorities just described require IT services appropriate to these missions and priorities. Those priorities must be reflected in the MOEs, shown in Table 3132, by which the service provider solutions are evaluated and by which the ultimate NMCI service is measured. The BOS functional area has identified the following priorities along with their corresponding performance measures.

Priority	Required IT Services	Performance Measures
1	Ability to pass bandwidth intensive traffic over wide area	Seamless communication; low latency
2	Ability to pass sensitive but unclassified, as well as classified information	Multiple level classification system
3	Ability to protect sensitive information	Time to detect intrusion, time to react to intrustion

Table 3132 BOS IT Performance Measures

3.6.4   Supported Systems

There are three major enterprise functional systems that pertain to BOS – the series of logistics, personnel, and financial. All of these systems will be critical and will have a large surge increase in phases 2 through 7. They are primarily client-server operations. Some use regional databases, thereby increasing the communications requirement.

Air operations will include support of the meteorology/oceanography functional systems and its reliance on graphics.

3.6.5   Geographic Information

As was shown in Table, the BOS functions are distributed across CONUS and Hawaii at every base, campus, and station. Many of the services categorized by BOS require communications predominantly on the base, campus or station. It is estimated that BOS communications contained within the Base Area Network (BAN) or LAN would approximate 80 percent.

There are, however, services such as air operations, pier operations, and command support that require sporadic communications across the wide area. Air operations and pier operations are directly correlated with the aircraft and ship operations that they support, and are therefore their activity levels are directly tied to fleet movements and training exercises.

3.7 MEDICAL AND DENTAL - NAVY

Medical and Dental is one of the seven operational/functional activity areas used in this DRM to describe how the Navy performs its mission. The intent of this section is to provide a brief overview of the mission, people, and locations that relate to this function, leading to the real objective - a description of the IT infrastructure that must be in place to support it. The elements of the IT description will characterize how the work activities of this function place demands or stress on the IT infrastructure (NMCI) during a hypothetical set of potential environments in which the Navy must be prepared to operate, as described in chapter 2. The graph in Figure 27 is provided as a way of introduction, showing the notional stress that Medical and Dental could be expected to place on NMCI during peacetime and during increases in operational tempo. The following provides the supporting detail.
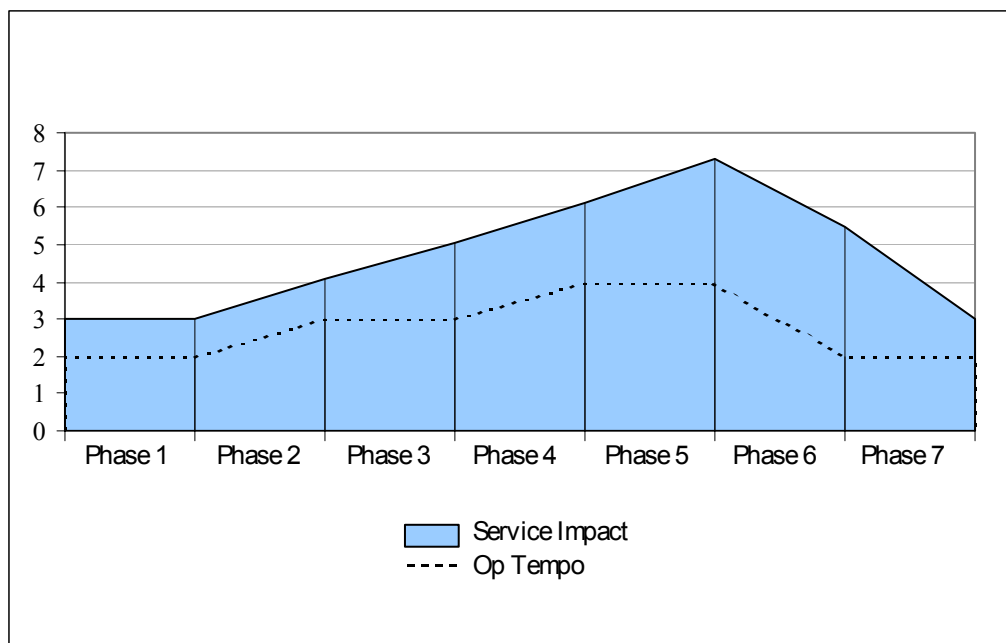
Figure 27. Medical Impact on NMCI Services

3.7.1 Functional Description

Medical provides the support functions of providing medical and dental care to Navy and Marine Corps active duty, retired, and dependents. This includes preventive medicine, hospitalization (both in-patient and out-patient), and preventive medicine.

The medical infrastructure includes 12 hospitals in CONUS and Hawaii fleet concentration areas, and approximately 150 clinics distributed throughout Navy and Marine Corps installations. These hospitals and clinics are all under the management authority of the Defense Health Program Office, a government organization under the DoD.

Naval hospitals are classified by their types of care. Examples are teaching hospitals, psychiatric, general medicine, and orthopedic. These hospitals do not operate at full staff during non-war time, and have to be brought up to full staffing at the start of hostilities. This would include call up of all reserve medical personnel.

There are contingencies for Forward Medical Facilities (FMFs) as front line medical hospitals deployed from pre-positioned containers. Currently, no FMFs are active but these can be made active by staffing of reserve personnel. The impact of this is to require extensive logistics, transportation, and communications in times of conflict/crisis.

The Navy and Marine Corps forces, ashore and in garrison, are staffed by onboard medical and dental personnel, for the treatment of personnel. These medical personnel accompany those forces that deploy. This also includes special teams that are attached at deployment, such as flight surgeons and medical/surgical teams that are not normally assigned.

The assignment and distribution of medical and dental personnel in CONUS and Hawaii is by Primary Treatment Areas as specified by TRICARE (a branch of Military Health Systems). The major areas are Tidewater Virginia, San Diego, and Bethesda Maryland. Smaller areas are Bremerton, Washington; Groton, Connecticut; and Jacksonville, Florida. Hawaii is under the Army Medical Corps, although there are large Naval branch medical clinics, similar in size to Jacksonville. Table 33 provides specific numbers on the number of civilians and military assigned just to the hospitals in CONUS/Hawaii.

Region	Civilian and Military
Bethesda	1,842
Portsmouth	3,197
Jacksonville	1,446
Pensacola	1,105
Corpus Christi	294
Great Lakes	1,307
Groton	474
Newport	496
San Diego	2,570
Bremerton	942
29 Palms	414
Pearl Harbor	450
Total	14,537

Table 33 Naval Medical and Dental Personnel Distribution

For CONUS and Hawaii peacetime operations, the current medical operational plan uses private health care organizations to augment medical and dental staffs. These staffs could not be deployed during conflict or crises. This places greater reliance on reserve forces during any contingency.
Naval medical uses a number of medical service corps and medical personnel to staff its own logistics and IT operations. These medical personnel may be used elsewhere during crises, which means that they will have to be back-filled by infusion of other Navy logistics and IT personnel.

3.7.2 Activities at Specific Operation Points

During Steady State operation, Medical must support the delivery of health care to active duty, retired, and dependents of all Services. The nature of these services can vary from emergency surgery to outpatient health care. During an emergency situation, we would require increased communications to determine available blood supplies, available medical supplies, and consultation (to include tele-medicine). Also communication needs may increase for transportation of patient.

During a surge to one MTW, generally ½ of the Navy medical staff would be deployed to include one hospital ship. This would deplete the staffing of one major medical facility, which would have to be filled by the reserves or additional contract staff. The CONUS region affected would tend to correspond to the proximity of the conflict or contingency. Special teams would be deployed from major medical facilities to augment the involved Battle Groups and/or Amphibious Ready Groups. The number of medical personnel involved is approximated in Table 34. Any

MTW operations would necessarily involve joint and coalition forces requiring increased communication links and interoperability both in the deployed area and back in CONUS.

	Total to Deploy	Reserve Back Fill
Health Care Professionals	31,028	6153
Non-Health Care Professionals	10,023	0
Reserve Fleet Hospital Call Up	2,106	0
Reserve Fourth Medical Batallion	1,757	0
Total	44,914	6153

Table 34 Naval Medical Personnel to Deploy

During a surge to two MTW, approximately 90 percent of Medical and Dental staffs will be deployed. The accompanying logistics support required to sustain medical operations will require extraordinary levels of communications, to include materiel tracking, patient movement, and reserve movement. To respond to returning casualties, all vacated positions will have to be backfilled by reserves or civilian staff. This will require a heavy indoctrination and training to bring the staff up to operational readiness.

Redeployment of medical support personnel and materiel will require an equally intense time of communication requirements. This will require a number of weeks and perhaps months to recover and return assets and personnel.

3.7.3 Specific IT Support

The Naval medical community currently provides its own IT support for Health Affairs. The medical community will use NMCI services where the business case analysis shows them to be advantageous.

The Naval Medical community is part of a tri-service agency and interfaces with the Air Force and Army through a fully managed ATM network. Operational functions are distributed among the Service partners as strategic business functions. Each service runs their assigned functions for themselves and the other members.

The medical community is highly reliant on large amounts of data. This data is required for the proper treatment of personnel and sometimes critical to proper medical care. This data resides on distributed databases throughout CONUS and Hawaii, and has to be available at all times.

The Naval medical community currently relies on Windows NT desktops and runs a variety of servers to include DECs, mainframes, minis, and metadata repositories (operated by DISA). Currently most applications are client-server based but as technology advances will change to a regional data structure with greater reliance on communications.

The most significant of the mainframes is an IBM 3090 CMOS that is being used to house large amounts of historical medical data for rapid retrieval. This is located at Bethesda, Maryland at the Naval Medical Information Management Center.

At steady state operations, the medical community IT requirement is met by the Military Health Systems Intranet. Peace time IT operations are characterized by periods of high demand for data, usually driven by hospital patient loading or CONUS regional crisis.

The steady state demand is noticeably increasing due to improvements in technology and the corresponding reliance upon IT. Help desk services are 24X7 at tiers three and two (provided from San Antonio, Texas), and tier one provided locally from each command. The Network Operations Center (NOC) runs 24X7 service from San Antonio, Texas performing diagnostics and repair on circuits.

At the surge to one and two MTWs, the majority of IT needs can still be met by the Medical Intranet with small augmentation from the NMCI. At these phases, medical personnel begin to be deployed to the field and backfilling can best be performed by NMCI. It is envisioned that the deployed personnel will be supported by the field units they are deployed to. The sites from which they deploy will retain contact and assistance but will not offer active IT support. The medical units will rely on levels of service provided by the units they are deployed to. Training for reserve medical personnel will be labor intensive.

During redeployment, an increased demand will be made on the NMCI for logistical communication support.

The top six services (Security, Enterprise Network Management, Help Desk, Wide Area Network Connectivity, Base Area and LAN Services, and Video Teleconferencing) are displayed based upon their Services Impact evaluation performed by stakeholders. The graphical representations are shown in Figure 28. The supporting data is provided in Table 35. The stress on the NMCI occurs during one and two MTW for all services; Medical exhibited one of the major sources of stress of the operational/functional activities.
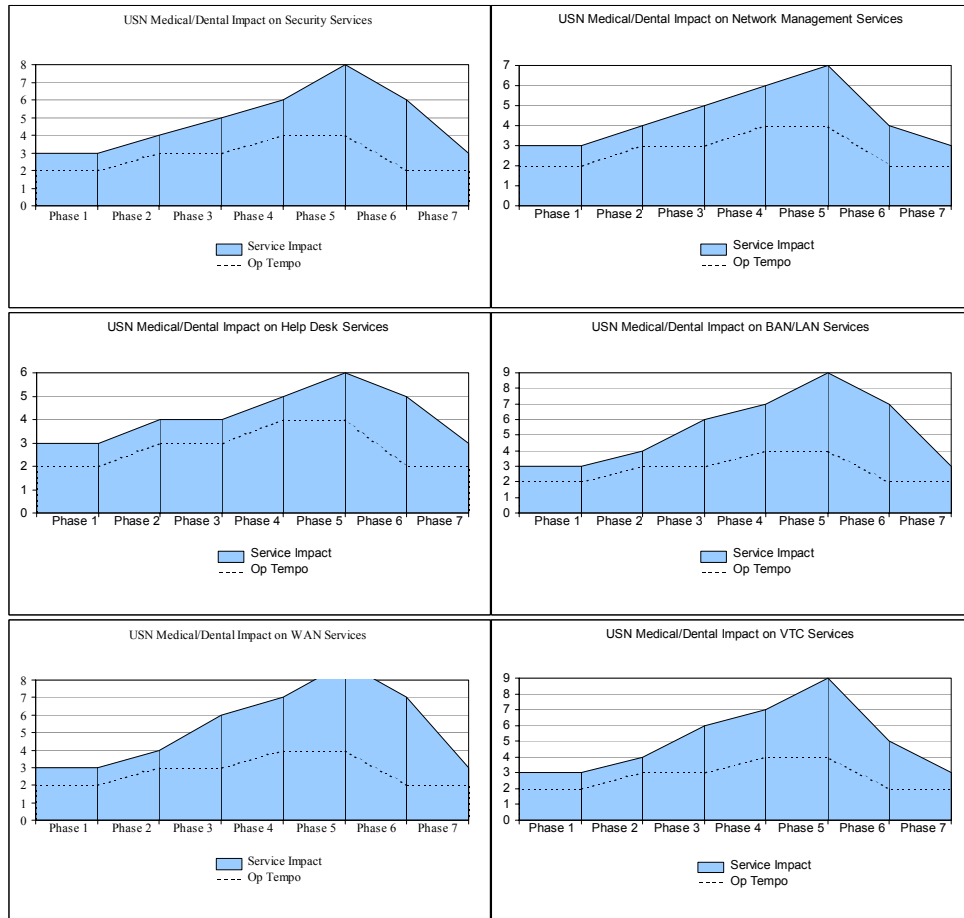
Figure 28. Individual Service Impacts for Medical

The operational/functional IT managers estimated stress data for the list of 13 NMCI services introduced in chapter 2.The data includes the six graphically depicted above plus seven others. The complete set of data is presented in the

NMCI Services Impact Worksheet below.

	Phases						
Network Services	1	2	3	4	5	6	7
Security Services (firewalls, intrusion detection, availability, encryption)	0	1	1	1	2	-2	-3
Wide Area Network Connectivity (access to DISN (SIPRNET and NIPRNET), commercial WAN, Internet) (includes capacity, functionality, and assurance)	0	1	2	1	2	-2	-4
Base Area and Local Area Network Services (voice, video and data) (end-user to WAN POP; assumes classified and unclassified) (includes availability, capacity, functionality, and assurance	0	1	2	1	2	-2	-4
Desktop Hardware and Software (provisioning/ relocating of end user desktop suites)	0	1	0	1	0	-1	-1
Help Desk and Technical Support (touch labor, support to users)	0	1	0	1	1	-1	-3
Enterprise Network Management (includes performance management, directory, domain name system, connectivity or accounts adds/moves/ deletes, VPN support, systems integration, configuraton management, capacity planning (includes classified and unclassified)	0	1	1	1	1	-3	-1
Organizational Messaging (AUTODIN, DMS)	0	2	1	2	1	-1	-5
Email (capacity, availability, classified and unclassified)	0	2	0	1	0	0	-3
Web Services (web enabled applications hosting, search engines, news group services, web site hosting)	0	1	0	1	0	0	-2
Remote Telephone Access	0	1	1	1	1	-2	-2
Video-teleconferencing (including management and set up of sessions)	0	1	2	1	2	-4	-2
Telephony (switched voice, voice over data, cellular service, pagers)	0	1	1	1	0	-1	-2
Training (system administrator, end user training)	0	1	0	1	1	-2	-1
Summary Value	3	1	1	3	1	-2	-4

Table 35 Medical

The Medical functional area mission requirements previously described, during steady state and through the phases of MTW, have varying priorities as determined by the command authority. The IT services that support these mission requirements similarly have priorities that closely mirror the mission priorities. Those priorities must be reflected in the MOEs, shown in Table 36, by which the service provider solutions are evaluated and by which the ultimate NMCI service is measured. The Medical functional area has identified the following priorities along with their corresponding performance measures.

Priority	Required IT Services	Performance Measures
1	High reliability	Availability and Bandwidth; most requirements would not be real-time
2	Connectivity to Tri-Service Health Care partners	Availability of secure communication between Army, Air Force
3	Security	A high level of security will be needed to protect critical medical logistics, e.g., blood
4	Tele-medicine	Real time telemedicine can cause high bandwidth needs
5	Projected patient load to VA and commercial hospitals	Projected communications over public networks

Table 36 Functional Area Performance Measures

3.7.4 Supported Systems

There are currently five major enterprise functional systems and 50 sub-systems that support the medical, dental, and medical logistics needs. All of these systems will be critical and will have a large surge increase in phases 2 through 7. They are primarily client-server operations. Some use regional databases, thereby increasing the communications requirement.

The major executive information system is the Corporate Executive Information System (CEIS). It is centrally based at the DISA facility in Denver, Colorado. During peacetime this system has high bandwidth needs that could increase by 75 percent during a two MTW scenario.

The Composite Healthcare System (CHCS) contains all medical treatment information for active duty and retired personnel, as well as dependents and reserves. Its utilization will greatly increase during the one or two MTW scenario in order to transfer health care records with the personnel.

The medical logistics programs will maintain supplies and equipment during peacetime, requiring moderate communications during the steady state, but accelerating to a high state of activity during any one or two MTW scenario.

3.7.5 Geographic Information

The five primary centers of activity will be San Diego, Tidewater, Bethesda, Groton, and Bremerton. They are moderate to heavy IT service users. They are the base of tele-medicine for Naval medicine. However, it is accurate to say that all medical treatment centers are at least moderate IT service users, and this would include the nine mid-size hospitals. The approximately 150 branch clinics can be considered light IT users.

There is one other facility, the Medical Logistics Command at Fort Detrick, Maryland, that will be a light user during steady state. During any one or two MTW scenario they will become a heavy user.

3.8   ACQUISITION - NAVSEA

Acquisition is one of the seven operational/functional activity areas used in this DRM to describe how the Navy performs its mission. The intent of this section is to provide a brief overview of one acquisition organization, Naval Sea Systems Command (NAVSEA), its mission, people, and locations where it performs its business, leading to the real objective - a description of the IT infrastructure that must be in place to support it. The elements of the IT description will characterize how the work activities of this function place demands or stress on the IT infrastructure (NMCI) during a hypothetical set of potential environments in which the Navy must be prepared to operate, as described in chapter 2. The graph in Figure 2930 is provided as a way of introduction, showing the notional stress that NAVSEA could be expected to place on NMCI during peacetime and during increases in operational tempo. The following provides the supporting detail.
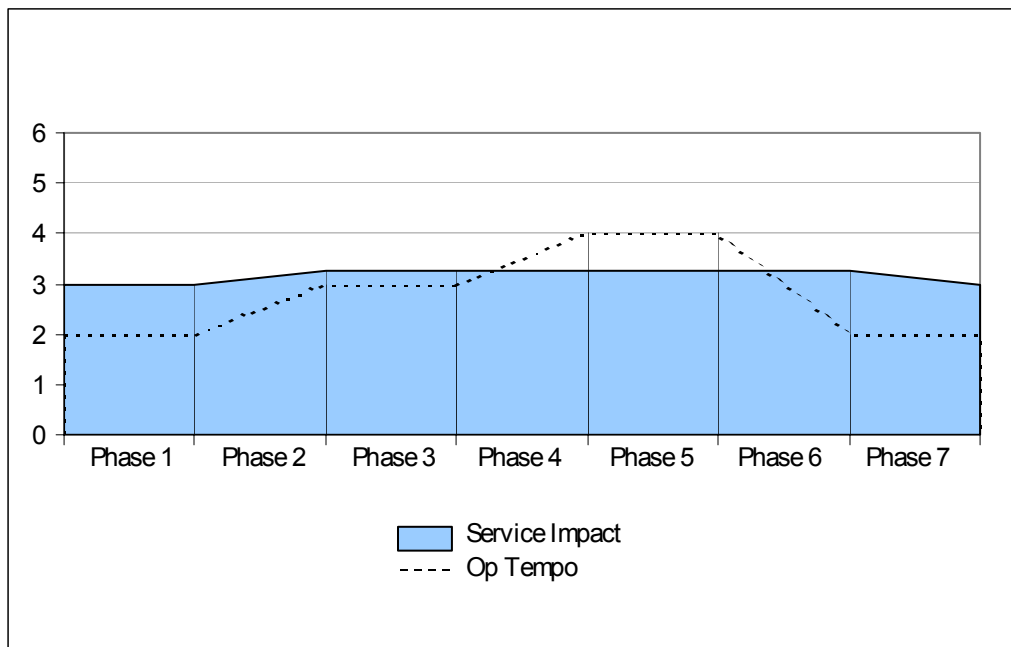
Figure 2930. NAVSEA Impact on NMCI Services

3.8.1   Functional Description

The Naval Sea Systems Command (NAVSEA) is the Navy Department's central activity for designing, engineering, integrating, building and procuring U.S. Naval ships and shipboard weapons and combat systems that are operationally superior so our Sailors and Marines can protect and defend our national interests.

NAVSEA's responsibilities also include the maintenance, repair, modernization and conversion of in-service ships and their weapons and combat systems. Additionally, it provides technical, industrial and logistics support for naval ships, and ensures the proper design and development of the total ship, including contractor-furnished shipboard systems.

Other important NAVSEA functions include introduction of ships to the Fleet; the Navy's salvage and diving operation; explosive ordnance safety and disposal; coordination of naval ship conversion and repair for both the DoD and the Military Sealift Command; and support of ship construction for the Maritime Administration.

The NAVSEA team is located at our headquarters in Arlington, VA, at our affiliated PEOs, and at our field activities and additional detachments. There are 25 major sites throughout CONUS. Included in our field activities are:

- 4 Naval Shipyards
- 2 Warfare Centers
- The Naval Ordnance Center
- 9 Supervisor-of-Shipbuilding Offices

- Other PEO and fleet support activities that make up the balance of our team

NAVSEA is the largest of the five Navy Systems Commands. It manages 138 Acquisition Category programs, which are assigned to the Command's 7 affiliated Program Executive Officers (PEOs) and various Headquarters elements. NAVSEA administers more than 1,400 foreign military sales cases involving 80 countries, and four NATO organizations. These affiliated PEOs include the following:

- Carriers (CV)
- Mine Warfare (MIW)
- Surface Combatants (TSC)
- Submarine (SUB)
- Undersea Warfare (USW)
- 21st Century Destroyer (DD21)
- Expeditionary Warfare (EXW)

Naval Sea Systems Command has two major Warfare Centers (Naval Surface Warfare Center, NSWC, and Naval Undersea Warfare Center, NUWC). NSWC and its five divisions provide a full range of engineering services for the Navy's surface warfare platforms and systems. In the past year, NSWC has focused on building flexibility and multi-mission capabilities directly into initial design. NUWC is the Navy's full-spectrum research, development, T&E, engineering, and Fleet support center for submarines, autonomous underwater systems, and offensive and defensive weapons systems associated with undersea warfare.

The four Naval Shipyards (Portsmouth, Norfolk, Pearl Harbor, and Puget Sound) serve the very core of the Navy's industrial infrastructure, responsible for the maintenance, modernization, inactivation, and disposal of Navy ships and submarines.

The Supervisors of Shipbuilding, Conversion, and Repair (SUPSHIPs) are geographically dispersed and serve as DoD's designated contract administrators for shipbuilding and ship repair contracts. Located near private shipbuilding and ship repair facilities throughout the United States, the SUPSHIPs act as NAVSEA's on-site technical, contractual, and business agents. Working side by side with the shipbuilders, these agents are instrumental in bringing each new ship from concept to reality, and ensuring the ship's readiness and technical superiority throughout its service life.

While NAVSEA has approximately 900 officers and 2,500 enlisted personnel, the vast majority of its employees are civilians. The Command's FY98 authorized civilian end-strength is 51,819. Approximately 6% of the civilian workforce is located at the Command's Headquarters in Arlington, VA – 2560 at the HQ itself and another 797 in the seven PEOs which manage a number of major acquisition programs for the Assistant Secretary of the Navy for Research, Development and Acquisition, ASN (RD&A). The distribution of the civilian workforce is shown in Table 37 for the major organizations.

	Civilian Workforce
Headquarters, Arlington VA	2,560
PEOs (7), Arlington VA	797
Shipyards (4)	21,095
Naval Surface Warfare	16,755
Undersea Warfare	4,536
Ordnance Centers	1,540
Supervisors of Shipbuilding (9)	2,868

Table 37 Distribution of NAVSEA Civilian Workforce

Organizationally, as of 1 June 1998, the Command had 38 subordinate shore activities and more than 150 detachments and on-site offices. These organizations are located all over the United States and a small number are overseas. Specific locations are shown in Table 3839.

California	Mississippi
SUPSHIP San Diego	SUPSHIP Pascagoula
WPNSTA Concord	**New Hampshire**
WPNSTA Seal Beach	Submarine Maintenance, Engineering,
Naval Warfare Assessment	Planning and Procurement
Division Corona	**New Jersey**
NSWC Port Hueneme Division	WPNSTA Earle
Connecticut	**Pennsylvania**
SUPSHIP Groton	NAVSEA Logistics Center
Florida	NSWC SHIPSYSENGSTA
Navy Experimental Diving Unit	**Rhode Island**
SUPSHIP Jacksonville	Naval Undersea Warfare Center HQ
NSWC COASTSYSSTA	NUWC Newport Division
Panama City	**South Carolina**
Hawaii	WPNSTA Charleston
NAVSHIPYD Pearl Harbor	**Virginia**
Indiana	NAVSEA HQ and PEOs
NSWC Crane Division	NSWC Dahlgren Division
Louisiana	AEGIS Training Center
SUPSHIP New Orleans	SUPSHIP Portsmouth
Maine	SUPSHIP Newport News
NAVSHIPYD Portsmouth	NAVSHIPYD Norfolk
SUPSHIP Bath	WPNSTA Yorktown
Maryland	Naval Surface Warfare Center HQ
Naval Ordnance Center HQ	**Washington**
NAVEODTECHDIV	NUWC Keyport Division
NSWC Carderock Division	NAVSHIPYD Puget Sound
NSWC Indian Head Division	SUPSHIP Puget Sound

Table 3839 NAVSEA Shore Activities

NAVSEA's major resources are its employees and facilities along with those of the private industrial sector. Whenever possible, NAVSEA relies on the private sector for a wide range of products and support - from ship design and engineering, to production of ships, ordnance and other complex systems. Ten private shipyards, supported by thousands of subcontractors throughout the country, are doing the construction work on new Navy ships. Presently, NAVSEA has master ship repair agreements with 36 shipyards.

Two Warfare Centers, Surface and Undersea, provide highly competent people and facilities to lead and manage the development and support of NAVSEA's ships and systems throughout their life cycles. The Naval Ordnance Center maintains, stores and loads/unloads ordnance and munitions for the deployed fleet. The Supervisors-of-Shipbuilding manage and deliver our new ships from the private sector and see to their repairs in that sector during their lifetime.

Among NAVSEA's most important assets are its 4 naval shipyards – Portsmouth NH, Norfolk VA, Puget Sound WA, and Pearl Harbor HI. Their highly skilled, industrial work forces give the Navy a unique capability to repair and overhaul naval ships, and specifically, nuclear powered vessels.

3.8.2   Activities at Specific Operation Points

During Steady State operation, NAVSEA operational intensity is relatively level. Most work tends to be done by teams, and many of the members are located at different sites requiring extensive video teleconferencing, exchange of files/email, and remote dial in. Many of the business functions rely on enterprise functional systems and these are distributed across the DoD enterprise. Much of the work performed incorporates multimedia, graphics, and drawings. Web based tools have been developed and are widely used. Teaming partners include major contractors and joint services.

During surges to one and two MTWs, NAVSEA and the PEOs would experience little change in mission functions or tempo of operations. The exception to this may be the Shipyards which, at some point, may move to an expanded work schedule to accelerate delivery timelines. The weapons centers would also experience some increased activities. There would also be an escalation of services necessitating shorter response times to maintain 24x7 services for those activities directly supporting the conflicts. The NAVICP, addressed under the logistics function, will have distinctly increased activities and requirements.

3.8.3   Specific IT Support

The NAVSEA community has had extensive connectivity of its large number of sites via a fully managed ATM network developed and operated organically. The systems that support NAVSEA mission systems have resultantly become largely dependent upon robust, interconnected sites. The operational functions are distributed among the NAVSEA activities and sites.

The NAVSEA community is highly reliant on large amounts of data. This data is required for the activities that support design, engineering, integration, building, and procuring ships and shipboard weapons systems. NAVSEA currently relies on Windows NT desktops and runs a variety of servers to include DECs, mainframes, minis, and metadata repositories (operated by DISA). Currently most applications are migrating to a distributed data structure placing greater emphasis and reliance on communications.

The most significant of the users are the shipyards located at Bath, ME, Pascogola, MI, Bremerton, WA; and Pearl Harbor, HI. The IT requirements at these sites are characterized by global usage of large centrally managed drawings of ships, associated weapons systems and other support information. Another group of heavy users are the NSWCs, located at Carderock, MD; Indian Head, MD; Dahlgren,VA; and Port Hueneme, CA. The IT requirements at these sites are characterized by distributed research and engineering utilizing data intensive three dimensional models being worked on simultaneously at several geographically dispersed locations, including the headquarters.

At steady state operations, NAVSEA IT requirement are focused on the all of the phases of ship and submarine life cycle, all of which are characterized by high bandwidth, high reliability, and low latency requirements among teams that are geographically distributed. All of these functions require heavy, intense interaction with prime contractors, to contractor technical support and engineering services. They also require effective communication with the ships and submarines; both in port via the base area network and to units at sea, via the STEP sites. NAVSEA will generally require 12X7 Help Desk support.

At the surge to one and two MTWs, the majority of NAVSEA IT needs can still be met by 12X5 Help Desk support. Exceptions could include some shipyards, weapons centers and readiness related activities (e.g., engineering support) that may move to 24X7. NAVSEA personnel will not incur either a relocation or back fill as a result of mobilization. Training is expected to be largely unchanged.

NMCI must support the practical use of secure desktop Video Teleconferencing (VTC) in conjunction with sophisticated Navy applications. Multi-party VTC demonstrations have been conducted showing design reviews, real-time emergency response, ship-to-shore technical support, and other similar mission-critical uses. A typical illustration of desktop VTC use is a trouble-shooting scenario between engineers at a Test Facility and engineers at the Design Facility. The test engineers initiated the call, and described a part failure to the design engineers using the audio and video displays. The part in question is then displayed using the video camera, illustrating in detail the actual failure. The design engineers retrieves the original engineering drawings from a third site, using a remote document storage and retrieval system, and displays that drawing at the workstation of the test engineers. Shared markup tools are used for both parties to jointly design a fix that solved the problem discovered in the field. This scenario would be similar in the supply area where the design engineers would locate the production facility with the shortest lead-time to deliver a replacement part.

The NAVSEA mission requirements are stable through steady state and the phases of MTW.

The top six services (Security, Enterprise Network Management, Help Desk, Wide Area Network Connectivity, Base Area and LAN Services, and Video Teleconferencing) are displayed based upon their Services Impact evaluation performed by stakeholders. The graphical representations are shown in Figure 31. The supporting data is provided in Table 4041Table 4041. The NAVSEA stress on the NMCI during peacetime steady state is one of the heaviest of any organization in Navy; however, that level of stress remains relatively unchanged across the one and two MTW for Security services.
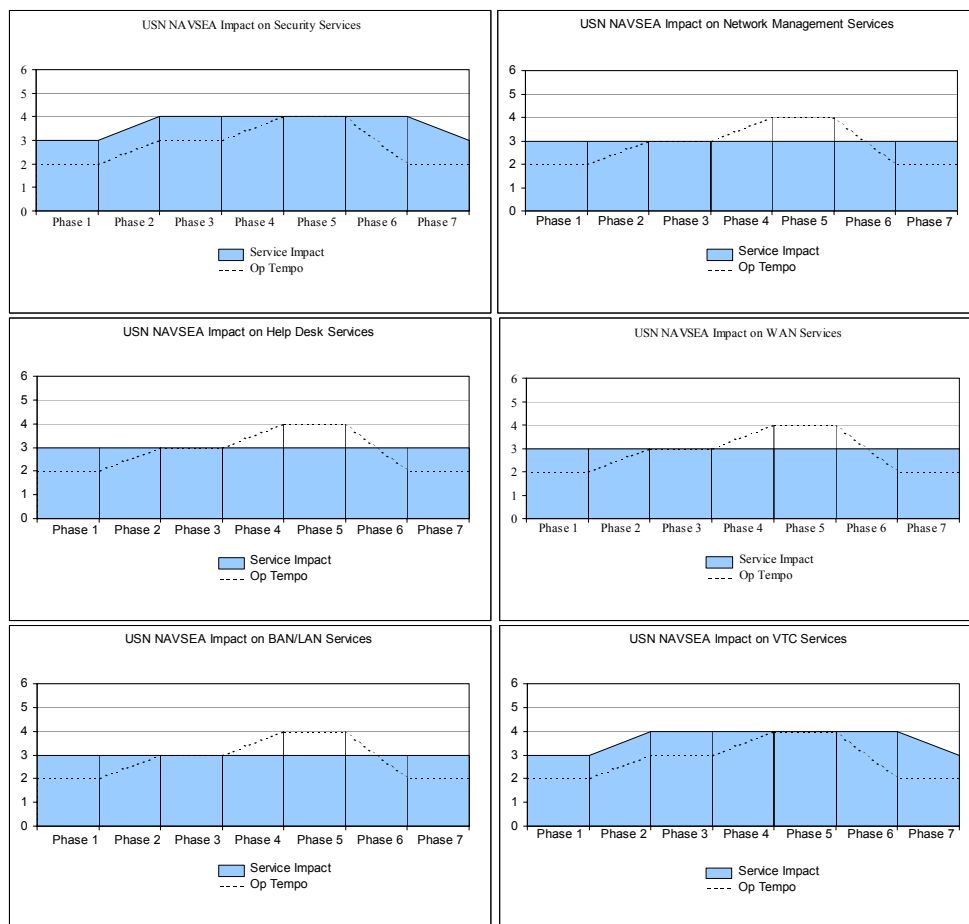
Figure 31. Individual Service Impact for NAVSEA

The operational/functional IT managers estimated stress data for the list of 13 NMCI services introduced in chapter

2.The data includes the six graphically depicted above plus seven others. The complete set of data is presented in the NMCI Services Impact Worksheet below.

USN NAVSEA

Network Services	Phase 1 Peacetime Ops	Phase 2 Deploy MTW1	Phase 3 Employ MTW1	Phase 4 Deploy MTW2	Phase 5 Employ MTW1/2	Phase 6 Redeployment	Phase 7 Peacetime Ops
Security Services: firewalls, intrusion detection, availability, encryption.	Steady State	+1	0	0	0	0	-1
Wide Area Network Connectivity: Access to DISN (SIPRNET & NIPRNET); commercial WAN; Internet. Includes capacity, functionality, and assurance.	Steady State	0	0	0	0	0	0
Base Area and Local Area Network Services: Voice, video and data; End-user to WAN POP; Assumes classified and unclassified; Includes availability, capacity, functionality, and assurance.	Steady State	0	0	0	0	0	0
Desktop Hardware and Software: Provisioning / relocating of end user desktop suites.	Steady State	0	0	0	0	0	0
Help Desk and Technical Support: Touch labor & support to users.	Steady State	0	0	0	0	0	0
Enterprise Network Management: Includes perf mngt, directory, DNS, connectivity or accounts (adds/moves/ deletes), VPN spt, sys integration, config mngt, capacity planning; class and unclass.	Steady State	0	0	0	0	0	0
Organizational Messaging: AUTODIN & DMS	Steady State	0	0	0	0	0	0
Email: Capacity, availability, classified and unclassified.	Steady State	+1	0	0	0	0	-1
Web Services: Web enabled applications hosting; search engines; news group services; web site hosting.	Steady State	0	0	0	0	0	0
Remote Telephone Access	Steady State	0	0	0	0	0	0
Video-teleconferencing: Including capacity, availability, management and set up of sessions.	Steady State	+1	0	0	0	0	-1
Telephony: Switched voice, voice over data, cellular service, pagers.	Steady State	0	0	0	0	0	0
Training: System administrator, end user training.	Steady State	0	0	0	0	0	0
Weighted Average of Impact on NMCI Services. First cell is Steady State SLI.	3.00	3.25	3.25	3.25	3.25	3.25	3.00

Table 4041 NAVSEA

The IT services that support these mission requirements must be reflected in the performance measures, shown in

Table 42, by which the service provider solutions are evaluated and by which the ultimate NMCI service is measured. The acquisition functional area (to include acquisition, engineering,T&E) is identified the following priorities along with their corresponding performance measures.

Priority	Required IT Services	Performance Measures
1	Ability to pass bandwidth intensive traffic over wide area	Seamless communication; low latency
2	Ability to pass sensitive but unclassified, as well as classified information	Multiple level classification system
3	Ability to protect sensitive information	Time to detect intrusion, time to react to intrusion

Table 42 Functional Area Performance Measures

3.8.4 Supported Systems

There are several major enterprise functional systems that support the NAVSEA team, including systems such as JEDMICS, Joint Computer-aided Acquisition & Logistics Support (JCALS), and ATIS. These systems are essential for conducting the business of the individual programs, organizations, and sites. They are primarily client-server operations. Some use regional databases, thereby increasing the communications requirement.

Because of the acquisition orientation of NAVSEA, the use of these enterprise functional systems will be basically flat over the seven phases of the DRM scenario. It is expected that there will be some increased activity at the shipyards and technical support in support of the increased tempo of operations.

A typical use of information systems such as JDEDMICS, JCALS, and ATIS, would be for the repair of a Navy DDG-51 Class AEGIS destroyer. Several NAVSEA commands would communicate via the NMCI and use data residing on the JEDMICS. One data requirement of note is engineering drawings. On average, a typical Navy ship has hundreds of thousands of drawings, which includes the ship construction drawings, design drawings, material and equipment drawings, and system drawings for weaponry and engineering. The JEDMICS databases are distributed at various Navy activity locations like Moorestown, NJ; Louisville, KT; Keyport, WA; Port Hueneme, CA; Norfolk, VA; and Mechanicsburg, PA, and at the number of ship builders' sites. Mainframe computers are used to store and process these materials. For repair of the DDG, the requirement might be to transfer a number of ship drawings and data to support the repair. There are other instances where the entire set of drawings would be needed to be transferred in a few days.

Another application is the Advanced Technical Information Support System (ATIS). ATIS is a centralized information service developed to distribute Navy technical resources. It includes technical manuals, standards and specifications documents. The NMCI must provide the connectivity and bandwidth to allow all NAVSEA users to access and process these documents.

3.8.5 Geographic Information

The primary geographic areas of activity within the NAVSEA team are ranked according to the robustness of system use.

- Heavy Users: Norfolk, San Diego, Puget Sound, Pascagoula, Jacksonville, Charleston, Bath, and Washington DC. The use is characterized by spikes caused by data-intensive files and VTC.

- Moderate to Heavy Users: Carderock, MD; Indian Head, MD; Dahlgren,VA; and Port Hueneme, CA, Headquarters. The use is characterized by heavy use of engineering related files and drawings.

Other key partners are the Naval Inventory Control Point (NAVICP) at Mechanicsburg, PA, and the industry partners.

The general population distribution of selected NAVSEA components is described in Table 4344.

NAVSEA Washington		2,601
Affiliated PEOs		733
Ship Yards	NSY Portsmouth	3,474
	NSY Norfolk	6,781
	NSY Puget Sound	8,802
SUPSHIPS	SUPSHIP Bath	222
	SUPSHIP Portsmouth	940
	SUPSHIP New Orleans	243
	SUPSHIP San Diego	465
	SUPSHIP Puget Sound	88
	SUPSHIP Groton	179
	SUPSHIP Jacksonville	177
	SUPSHIP Newport News	373
	SUPSHIP Pascagoula	333
NSWC	NSWC Indian Head	2,004
	NSWC Crane	3,209
	NSWC Port Hueneme	2,276
	DTRC Carderock	3,749
	NSWC Dahlgren	3,080
	NSWC Corona	720
	NSWC Panama City	1,110
NUWC	NUWES Keyport	4,192
	NUSC Newport	2,830
NOC	NOC Headquarters	177
	NWS Charleston	54
	Inventory MAMAG	150
	NWS Seal Beach	576
Other		2,583
NAVSEA Total		52,121

Table 4344 NAVSEA Team Total Manpower

3.9 ACQUISITION - NAVAIR

Acquisition is one of the seven operational/functional activity areas used in this DRM to describe how the Navy performs its mission. The intent of this section is to provide a brief overview of one acquisition organization, Naval Air Systems Command (NAVAIR), its mission, people, and locations where it performs its business, leading to the real objective - a description of the IT infrastructure that must be in place to support it. The elements of the IT description will characterize how the work activities of this function place demands or stress on the IT infrastructure (NMCI) during a hypothetical set of potential environments in which the Navy must be prepared to operate, as described in chapter 2. The graph in Figure 32 is provided as a way of introduction, showing the notional stress that NAVAIR could be expected to place on NMCI during peacetime and during increases in operational tempo. The following provides the supporting detail.
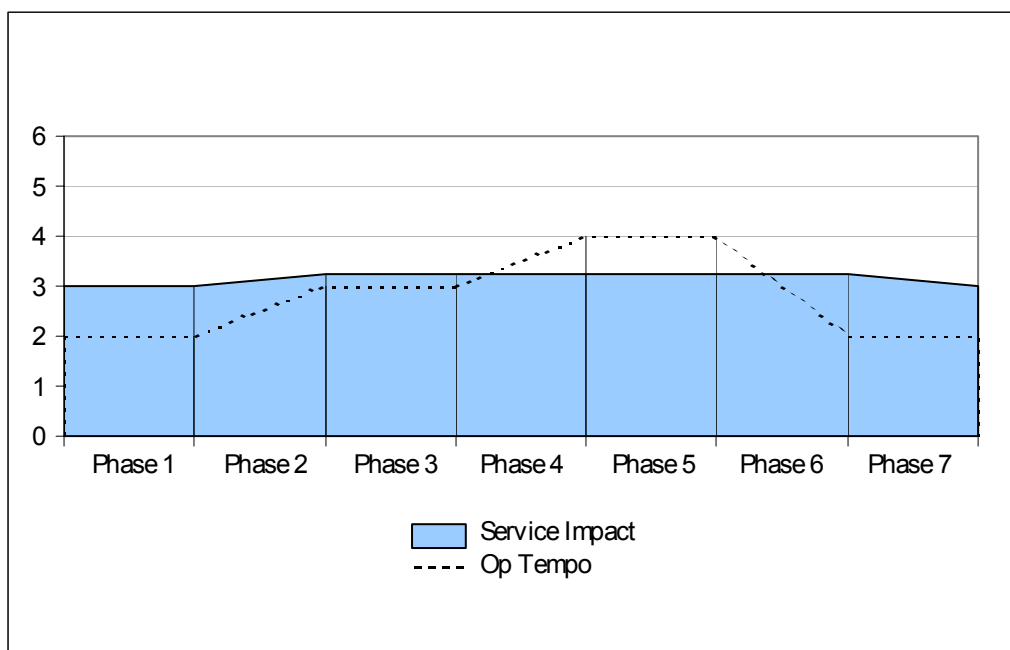
Figure 32. NAVAIR Impact in NMCI Services

3.9.1 Functional Description

The NAVAIR Systems Team, in partnership with industry, develops, acquires and supports Navy and Marine Corps aeronautical and related technology systems which can be operated and sustained at sea. NAVAIR provides for the total life cycle support of aviation weapons systems include: research, design, development, and engineering; acquisition;T&E; training facilities and equipment; repair and modification; and in-service engineering and logistics support. NAVAIR products support the operating forces.

There are six organizations that are part of the NAVAIR Team, including four separate Program Executive Offices (PEOs) that manage a wide range of major aircraft and missile programs. Naval Air Systems Command (NAVAIRSYSCOM) is a key member of the Team and is responsible for the development, procurement, supply and support of all aviation systems, related equipment, and services. NAVAIRSYSCOM manages programs other than those assigned to the PEOs, as well as providing functional support, e.g., logistics, engineering, contracting, testing and evaluation to assist the PEOs in program execution. The final member, NAVICP, addresses the spare and repair parts for the aircraft and missile programs. Products and services delivered on behalf of the customer include: aircraft, avionics, air-launched weapons, electronic warfare systems, cruise missiles, unmanned aerial vehicles, launch and arresting gear, training equipment and facilities, and all other equipment related to Navy and Marine Corps air power. In total, approximately 150 acquisition programs are managed.

NAVAIR facilities are located at eight major sites throughout CONUS (China Lake, California; Point Mugu,

California; North Island, California; Lakehurst, New Jersey; Patuxent River, Maryland; Cherry Point, North Carolina; Jacksonville, Florida; and Orlando, Florida) and includes about 31,000 civilian and military. NAVICP activities are located at Mechanicsburg and Philadelphia, both in Pennsylvania.

NAVAIRSYSCOM has two major Naval Air Warfare Centers (Aircraft Division and Weapons Division) conducting complex, high levelT&E. Aircraft Division is at Patuxent River, Maryland and Lakehurst, New Jersey; the Weapons Division is at China Lake and Point Mugu. These ranges, laboratories, and test facilities have complex electronics, modeling and simulation, and high performance computing centers. The two divisions are joined in a coast-to-coast distributed simulation arena with connections to other DoD test facilities, research and development activities, and industry. Imagery and other bandwidth intensive graphics are regularly exchanged within and among sites.

The Naval Aviation Depots (NADEPs) are located at Jacksonville, Cherry Point, and North Island. These facilities perform rework and repair on aircraft and engines. These facilities include state-of-the-art process tools that require IT connectivity. These facilities are heavily dependent upon electronic exchange of engineering drawings, specifications, and maintenance data among supply support facilities, contractor facilities, and other NADEPs.

NAVICP at Philadelphia relies on enterprise logistics support and supply chain management in partnership with NAVAIR and the NADEPs. This capability relies heavily upon seamless IT connectivity and robust exchange of data across the enterprise.

The Training Systems Division at Orlando is supporting development of the training infrastructure and is a heavy developer and user of enterprise distributed computing, collaborative planning, and distance learning.

3.9.2   Activities at Specific Operation Points

During Steady State operation, NAVAIR operational intensity is relatively level. Most work tends to be done by teams, and many of the members are located at different sites requiring extensive video teleconferencing, exchange of files/email, and remote dial in. Many of the business functions rely on enterprise functional systems and these are distributed across the DoD enterprise. Much of the work performed incorporates multimedia, graphics, and drawings. Web based tools have been developed and are widely used. Teaming partners include major contractors and joint services.

During surges to one and two MTWs, NAVAIR and the PEOs would experience little change in mission functions or tempo of operations. The NAVICP, addressed under the logistics function, will in fact have distinctly increased activities and requirements.

3.9.3   Specific IT Support

The IT support addressed here excludes those functions covered by other functional categories addressed elsewhere (specifically, supply to include NAVICP and maintenance to include NADEPs). IT support here relates to functions the PEOs and NAVAIR perform, to include research, design, development, and engineering; acquisition;T&E; training facilities and equipment; management of repair, modification, and in-service engineering.

For the above functions, NAVAIR must link to prime contractors, to contractor technical support and engineering services, the Naval Air Warfare Centers (NAWCs) (both Aircraft and Weapons) NADEPS, NAVICP activities, the Air Staffs, Air Wings, and Squadrons. For internal management, links include OPNAV staff, SECNAV staff and Joint program staffs. These identified communications links vary widely in quantity and quality of network services required. NAVAIR will generally require 12X5 Help Desk support.

The NAWCs require extremely robust video and data services. Engineering data, heavy graphics, and streaming video are all characteristic of capabilities required. Distributed computing across the wide area is a required service. Seamless connectivity to major defense contractors is essential to normal business.

NAVAIR headquarters IT requirements are broad scoped and include use of distributed computing, enterprise legacy databases, virtual data warehouses, transaction processing, and decision support tools. These capabilities must seamlessly link to other networks including the DISN, and DoD enterprise databases.

The top six services (Security, Enterprise Network Management, Help Desk, Wide Area Network Connectivity,

Base Area and LAN Services, and Video Teleconferencing) are displayed based upon their Services Impact evaluation performed by stakeholders. The graphical representations are shown in Figure 33. The supporting data is provided in Table 45. The NAVAIR stress on the NMCI during peacetime steady state is one of the heaviest of any organization in the Navy; however, that level of stress remains relatively unchanged across the one and two MTW for Security services.
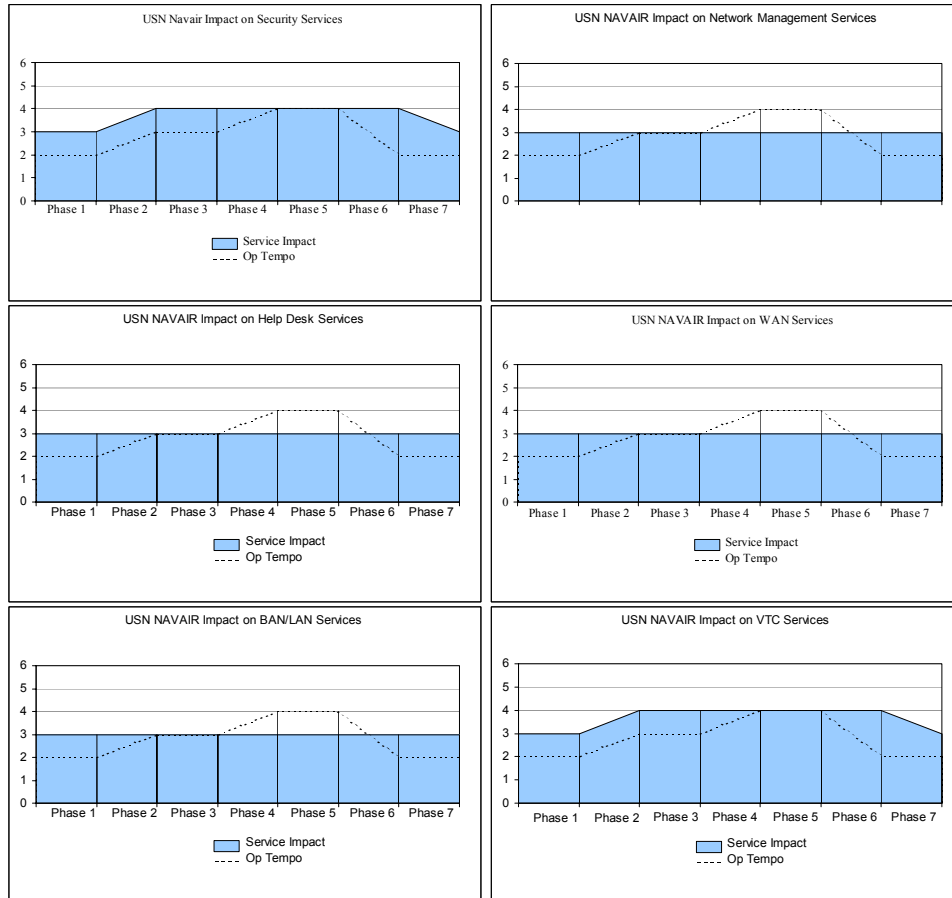
Figure 33. Individual Service Impacts for NAVAIR

The operational/functional IT managers estimated stress data for the list of 13 NMCI services introduced in chapter

2.The data includes the six graphically depicted above plus seven others. The complete set of data is presented in the NMCI Services Impact Worksheet below.

USN NAVAIR

Network Services	Phase 1 Peacetime Ops	Phase 2 Deploy MTW1	Phase 3 Employ MTW1	Phase 4 Deploy MTW2	Phase 5 Employ MTW1/2	Phase 6 Redeployment	Phase 7 Peacetime Ops
Security Services: firewalls, intrusion detection, availability, encryption.	Steady State	+1	0	0	0	0	-1
Wide Area Network Connectivity: Access to DISN (SIPRNET & NIPRNET); commercial WAN; Internet. Includes capacity, functionality, and assurance.	Steady State	0	0	0	0	0	0
Base Area and Local Area Network Services: Voice, video and data; End-user to WAN POP; Assumes classified and unclassified; Includes availability, capacity, functionality, and assurance.	Steady State	0	0	0	0	0	0
Desktop Hardware and Software: Provisioning / relocating of end user desktop suites.	Steady State	0	0	0	0	0	0
Help Desk and Technical Support: Touch labor & support to users.	Steady State	0	0	0	0	0	0
Enterprise Network Management: Includes perf mngt, directory, DNS, connectivity or accounts (adds/moves/ deletes), VPN spt, sys integration, config mngt, capacity planning; class and unclass.	Steady State	0	0	0	0	0	0
Organizational Messaging: AUTODIN & DMS	Steady State	0	0	0	0	0	0
Email: Capacity, availability, classified and unclassified.	Steady State	+1	0	0	0	0	-1
Web Services: Web enabled applications hosting; search engines; news group services; web site hosting.	Steady State	0	0	0	0	0	0
Remote Telephone Access	Steady State	0	0	0	0	0	0
Video-teleconferencing: Including capacity, availability, management and set up of sessions.	Steady State	+1	0	0	0	0	-1
Telephony: Switched voice, voice over data, cellular service, pagers.	Steady State	0	0	0	0	0	0
Training: System administrator, end user training.	Steady State	0	0	0	0	0	0
Weighted Average of Impact on NMCI Services. First cell is Steady State SLI.	3.00	3.25	3.25	3.25	3.25	3.25	3.00

Table 45 NAVAIR

The acquisition functional area mission requirements and priorities just described require IT services appropriate to these missions and priorities. Those priorities must be reflected in the performance measures, shown in Table 46, by which the service provider solutions are evaluated and by which the ultimate NMCI service is measured. The Acquisition functional area has identified the following priorities along with their corresponding measures of effectiveness.

Priority	Required IT Services	Performance Measures
1	Ability to pass bandwidth intensive traffic over wide area	Seamless communication; low latency
2	Ability to pass sensitive but unclassified, as well as classified information	Multiple level classification system
3	Ability to protect sensitive information	Time to detect intrusion, time to react to intrustion

Table 46 NAVAIR IT Services Performance Measures

3.9.4 Supported Systems

NAVAIR used a number of fully integrated enterprise business systems in support of management, maintenance, financial, contracts, logistics, and training. The functional enterprise systems approximate 30. Examples of these (most stressful) include:

NALCOMIS - an automated management information system that provides the maintenance, material, and operations managers in the Navy and Marine Corps organizational maintenance activities (OMAs) with timely and accurate information that aids in the day-to-day management of assigned aircraft and equipment.

Naval Aviation Logistics Data Analysis (NALDA) - an operational AIS providing data processing services Defense Megacenter Mechanicsburg, PA. Its capabilities furnish a wide spectrum of uses for managers, engineers, analysts and logisticians utilizing the system. Data input is provided from the Naval Aviation Maintenance and Material Management Data System (Aviation 3M). The NALDA System provides a centralized data bank, including maintenance retrieval and analysis capabilities that can be used in an interactive or batch manner through remote terminals in support of the Naval Aviation Integrated Logistics Support community.

These applications include state-of-the-art client-server and web-based technologies, but rely on the replication of data from the legacy environment. Migration to COTS applications is an objective but only limited successes have occurred. Access to enterprise applications is enterprise-wide.

3.9.5 Geographic Information

Highly bandwidth intensive data, multimedia, video teleconferencing, and graphics must be shared across the wider enterprise among the eight member geographically separated sites of the NAVAIR team.

Heavy stress on the NMCI services is expected at the two warfare centers located at Patuxent River, Maryland and China Lake, California. The strong interaction between program management, laboratories, T&E, and industry partners requires the most robust capabilities and throughput. The approximate population of users is shown in Table 47.

Location	Military and Civilians
Patuxent River MD	15,000
Lakehurst NJ	2,000
Cherry Point NC	2,500
Jacksonville FL	2,500
North Island CA	2,500
Point Mugu CA	3,000
China Lake CA	4,500
Orlando FL	1,000

Table 47 NAVAIR Team Members and Locations

3.10 OPERATIONAL/TACTICAL - UNITED STATES MARINE CORPS

Operational/Tactical is one of the six Marine Corps operational/functional activity areas used in this DRM to describe how the Marine Corps performs its mission. The intent of this section is to provide a brief overview of the mission, people, and locations that relate to this function, leading to the real objective – a description of the IT infrastructure and services that must be in place to support it. The elements of the IT description will characterize how the work activities of this function place demands or stress on the IT infrastructure (NMCI) during a hypothetical set of potential environments in which the Marine Corps must be prepared to operate, as described in chapter 2. The following graph is provided as a way of introduction, showing the notional stress that Operational/Tactical could be expected to place on NMCI during peace time and during increase in operational tempo. This graph was developed based on functional expert's input as reflected in Table 49.
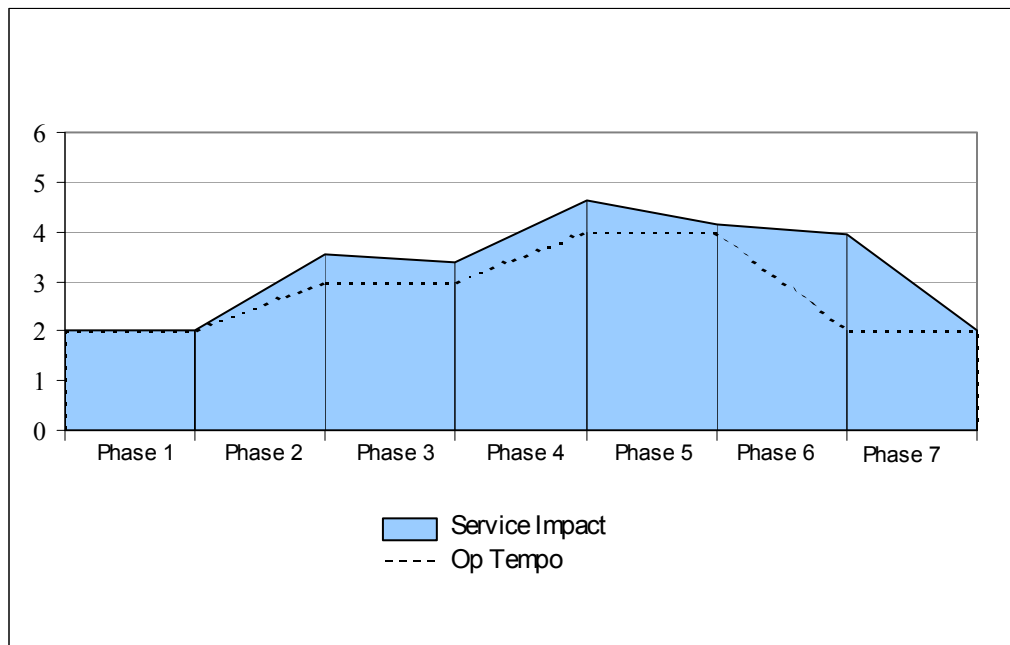
Figure 34 Operational/Tactical Impact on NMCI Services

3.10.1 Functional Description

The Marine Corps, within the DoN, is organized as a general purpose "force in readiness" to support national needs. Deploying for combat as combined-arms Marine Air Ground Task Forces (MAGTFs), the Marine Corps provides the National Command Authorities (NCA) with a responsive force that can conduct operations across the spectrum of conflict.

The Marine Corps is divided into four broad categories:
- Operating Forces
- Marine Corps Reserve
- Supporting Establishment
- Headquarters Marine Corps

3.10.1.1 USMC Operating Forces

The Marine Corps' operating forces consist of:
- Marine Corps Forces
- Marine Corps Security Forces (MCSF) at naval installations
- Marine security guard detachments at embassies and consulates around the globe.

The "Forces for Unified Commands" memorandum assigns Marine Corps operating forces to each of the combatant commands. The Marine Corps has established multiple Marine Corps component headquarters to support the unified commands. Marine Corps forces are organized as MAGTFs and are either deployed as part of U.S. Naval Expeditionary Forces or deployed separately as part of larger joint or combined forces. About 64 percent of all active duty Marines are assigned to these operation forces.

The commanders of Marine Forces (MARFOR) Atlantic and Pacific serve as Marine Corps component commanders to their respective combatant commanders and may also serve as commanding generals of Fleet Marine Forces (FMFs) Atlantic Pacific, and Europe. As commanding generals with the status of a naval type commander, they provide forces for service with Commander US Atlantic Fleet, Commander US Pacific Fleet, and Commander US Naval Forces Europe, respectively. The Marine Corps component commander deals directly with the CINC or joint force commander (JFC) in matters affecting the assigned MARFOR. He commands, trains, equips, and sustains MARFOR.

The MCSF includes approximately 3,400 Marines who protect key naval installations and facilities worldwide. The security forces include Marine barracks and Marine security force companies in the continental United States (CONUS) and abroad, as well as Marine detachments afloat. Within the MCSF Battalion there are two Fleet Anti-Terrorism Security Team (FAST) Companies with a total of eleven FAST platoons. Although not assigned to combatant commands, they are part of the operating forces of the Marine Corps which can be requested through the CNO.

The Marine Security Guard Battalion provides forces to the Department of State for embassy security. These Marines are currently assigned to 121 diplomatic posts in 115 countries throughout the world and are under the operation control of the Secretary of State.

The Marine Forces Reserve (MARFORRES) is organized, trained, and equipped under the Commander, Marine Forces Reserve (COMMARFORRES) with the primary role of augmenting and reinforcing the Regular Component during times of war and national emergency.

The Marine Corps supporting establishment consists of those personnel, bases, and activities that support the Marine Corps operating forces. This infrastructure consists primarily of 17 major bases and stations in the United States, Korea, and Japan, and all personnel, equipment, and facilities required to operate them. This equates to approximately 30,000 Marines.

Headquarters, U.S. Marine Corps, consists of the Commandant of the Marine Corps and those staff agencies that advise and assist the Commandant in discharging those responsibilities prescribed by law and higher authority.

3.10.1.1.1 MARINE AIR-GROUND TASK FORCE (MAGTF)

The MAGTF is the Marine Corps' principal organization for the conduct of all missions across the range of military operations. The MAGTF provides a combatant commander-in-chief or other operational commander with a versatile expeditionary force for responding to a broad range of crisis and conflict situations. MAGTFs are balanced, combined arms forces, with organic command, ground, aviation, and sustainment elements.

3.10.1.1.2 MAGTF Capabilities

MAGTF capabilities are not operationally maintained to merely wait for the next amphibious assault or regional war; they are deployed every day. Through operational experience, developed procedures, and sharply honed training routines, the Marine Corps stands ready to respond. Embarked aboard amphibious ships, forward-deployed MAGTFs provide decision makers with the capabilities to:

- Move forces into crisis areas without revealing their exact destinations or intentions;
- Provide continuous, combat ready force presence in international waters;
- Provide immediate national response in support of humanitarian and natural disaster relief operations;
- Provide credible yet not provocative combat power, as just-over-the-horizon of a potential adversary, for rapid employment as the initial response to a crisis;
- Support diplomatic processes for peaceful crisis resolution before employing immediate response combat forces;
- Project measured degrees of combat power ashore, at night, and under adverse weather conditions, if required;

- Introduce additional forces sequentially into a theater of operations;
- Operate independent of established airfields, basing agreements, and overflight rights;
- Conduct combat operations ashore using inherent combat server support brought into the theater of operations;
- Enable the introduction of follow-on MAGTF or joint and/or combined forces by securing staging areas ashore;
- Operate in rural and urban environments or hostile nuclear, biological, and chemical situations;
- Withdraw rapidly at the conclusion of operations or remain to help restore stability to the affected areas;
- Plan and commence execution of a mission within 6 to 48 hours of receiving a warning order.

3.10.1.1.3 MAGTF Composition

The Marine Corps task organizes for combat consistent with its statutory tasking to "...provide forces of combined arms, including aviation..." by forming forces into integrated, combined-arms MAGTFs employed to accomplish assigned missions. MAGTFs are specifically tailored for rapid deployment by air and/or sea. All MAGTFs are comprised of four elements:

Command Element (CE). The CE is the MAGTF headquarters. As with all other elements of the MAGTF, it is task organized to provide the command, control, communications, computers, intelligence, and interoperability (C4I2) necessary for effective planning and execution of all operations.

Ground Combat Element (GCE). The GCE is task organized to conduct ground operations to support the MAGTF mission. It is formed around an infantry unit reinforced with requisite artillery, reconnaissance, armor, and engineer forces and can vary in size and composition from a rifle battalion to one or more Marine divisions.

Aviation Combat Element (ACE). The ACE is task organized to perform those functions of Marine Corps aviation required to support the MAGTF mission. It is formed around an aviation headquarters with appropriate air control agencies, combat, combat support, and combat service support units. The ACE can vary in size and composition from an aviation detachment of specifically required aircraft to one or more Marine aircraft wings.

Combat Service Support Element (CSSE). The CSSE is task organized to provide the full range of combat service support functions and capabilities necessary to support the continued readiness and sustainability of the MAGTF as a whole. It is formed around a combat service support headquarters and may vary in size and composition from a support detachment to one or more Force Service Support Groups (FSSGs).
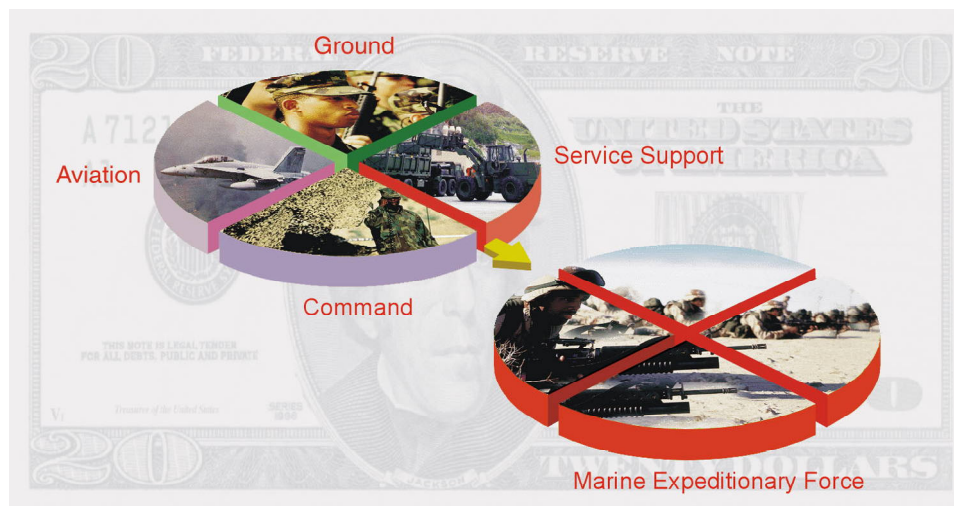
Figure 35 Marine Air-Ground Task Force

3.10.1.1.4 Types of MAGTF Organizations

Regardless of size, all MAGTFs are expeditionary. An expeditionary force is a capability vice a structure. Thus, any size MAGTF could be referred to as the illustrated Marine Expeditionary Force. However, to provide a frame

of reference for general sizing, MAGTFs are categorized in the following three types:

- Marine Expeditionary Force (MEF)
- Marine Expeditionary Unit (MEU)
- Special Purpose MAGTF (SPMAGTF).

MEF. The MEF is the principal Marine Corps warfighting organization, particularly for a larger crisis or contingency, and is normally commanded by a lieutenant general. A MEF can range in size from less than one, to multiple divisions and aircraft wings, together with one or more FSSGs.

With 60 days of accompanying supplies, MEFs are capable of both amphibious operations and sustained operations ashore in any geographic environment. With appropriate augmentation, the MEF CE is capable of performing the mission of a joint task force headquarters.

MEFs are the primary "standing MAGTFs" (i.e., they exist in peacetime as well as wartime). Currently the Marine Corps is organized with three standing MEFs, each with a division, wing, and FSSG. Marine component headquarters (Commander, Marine Forces, Atlantic (COMMARFORLANT) or Commander, Marine Forces, Pacific (COMMARFORPAC)) may form smaller MAGTFs from these MEFs. The Marine Corps reservoir of combat capabilities -- the divisions, wings, and FSSGs -- are assigned to these standing MEFs.

A MEF will normally deploy in echelon and will designate its lead element as the MEF (Forward).
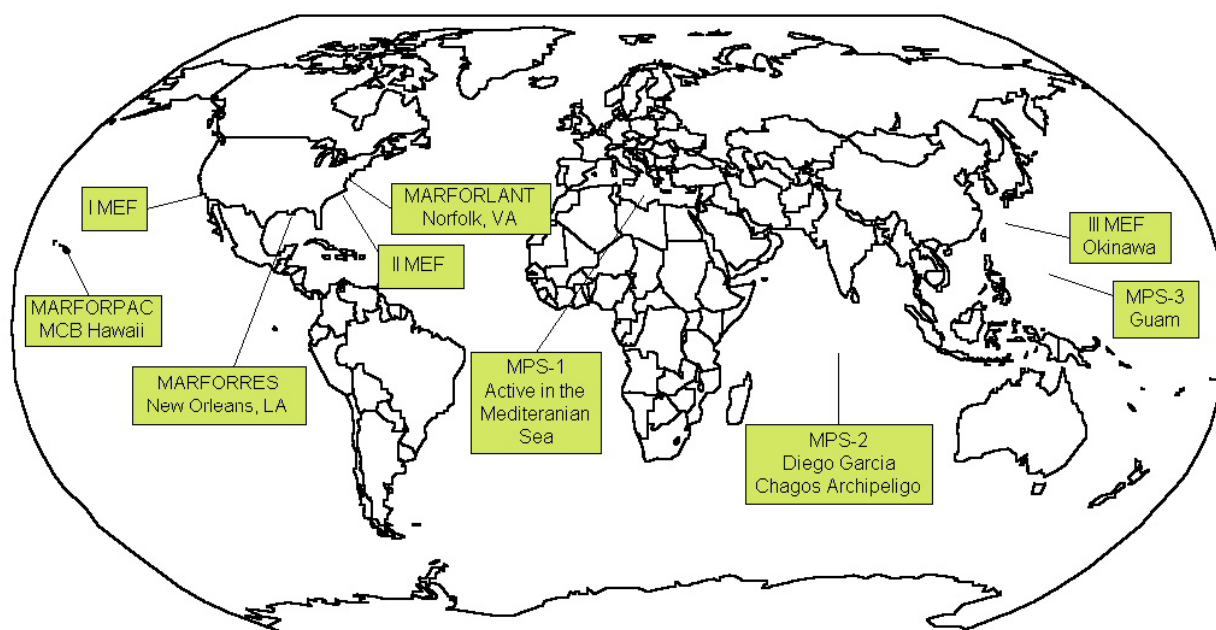
Figure 36 World Map Showing Location of MEFs, MPSs, & MARFORs

MEU. Forward deployed MEUs embarked aboard Amphibious Ready Group (ARG) shipping operate continuously in the areas of responsibility of numerous Unified Commanders.   These units provide the National Command Authorities and Unified Commanders an effective means of dealing with the uncertainties of future threats, by providing forward deployed units which offer unique opportunities for a variety of quick reaction, sea-based, crisis response options in either a conventional amphibious/expeditionary role, or in the execution of maritime special operations. The forward deployed MEU (SOC), forged and tested in real-world contingencies, remains the benchmark forward operating Marine force. The MEU is commanded by a colonel and deploys with 15 days of accompanying supplies.

Prior to deployment the MEU undergoes an intensive 6-month training program focusing on its conventional and selected maritime special operations missions. The training culminates with a thorough evaluation and certification as "special operations capable" (SOC).

SPMAGTF. The SPMAGTF is task organized to accomplish a specific mission, operation, or regionally focused

exercise. As such, SPMAGTFs can be organized, trained, and equipped to conduct a wide variety of expeditionary operations from crisis response to training exercises and peacetime missions. They are designated as SPMAGTF with a location: e.g., SPMAGTF (Somalia). Their duties cover the spectrum from noncombatant evacuation to disaster relief and humanitarian missions.

3.10.1.1.5 MAGTF Sustainability

A fundamental characteristic of a MAGTF is its ability to operate for extended periods as an expeditionary force, relying on internal resources for sustainment. All MAGTFs have inherent sustainability to be self-sufficient for preplanned periods. Larger MAGTFs have a deeper, broader, and more capable organic support capability. MAGTFs deploy with a portion of their accompanying supplies sufficient for a specific period of time:

- MEF - 60 days
- MEU - 15 days
- SPMAGTF - As the situation requires.

MAGTFs can augment their organic sustainability by using external support from Navy organizations, Wartime Host Nation Support (WHNS) agreements, Inter-Service Support Agreements (ISSAs), and in-theater cross service support.

3.10.1.1.6 Unique Unified Commander Support

Maritime Prepositioning Forces (MPF). MPFs provide an added dimension in mobility, readiness, and global responsiveness. The MPF program involves 13 ships, organized in three squadrons. These squadrons are strategically positioned in the Atlantic, Indian, and Pacific Oceans. The MPF program reduces MAGTF response time from weeks to days by prepositioning the bulk of equipment, and 30 days of supplies, for an approximately 18,000 man force aboard specially designed ships. Personnel and selected equipment can be airlifted quickly to an objective area to join with required equipment at a secure site. Equipment and supplies can also be selectively offloaded to support smaller MAGTFs. As graphically demonstrated in Operation Desert Shield, MPFs are integral to the rapid deployment of credible combat power. MPF program flexibility has been increased through selective and innovative loading plans and development of enhanced deployment options. In most cases, the Marine Corps MPF has divorced itself from the requirement for an improved port facility because of its organic in-stream off-load capability. Also unique to MPF are its bulk liquid and aviation support capabilities. MPF ships are capable of delivering fuel and water ashore from up to two miles at sea. MPF ships also support MAGTF ACE with aviation support equipment and ammunition for 72 fixed wing aircraft and 75 rotary wing aircraft.

Air Contingency Forces. Both MARFOR PAC and LANT maintain air contingency MAGTFs (ACMs) in a continuous state of readiness. An ACM is an on-call, combat-ready MAGTF that deploys by airlift ACMs vary in size based on mission requirements and the availability of airlift. Because they deploy by air, they generally have a limited organic logistics capability, and require an arrival airfield. ACMs usually are activated to respond to developing crises, and may deploy independently or in conjunction with other expeditionary forces. The ACM will be task-organized to meet the mission, the threat, and airlift availability. The ACM is a combat-ready task organization that can begin deployment by strategic airlift within hours of notification. The fixed-wing aircraft of the ACM will normally self-deploy. An ACM can deploy independently or in conjunction with a MEU(SOC), MPF, or other expeditionary force.

Norway Geo-prepositioning Program. The Norway Geo-prepositioning Program, established with the Government of Norway, permits the prepositioning and maintenance of one brigade worth of equipment in underground storage facilities in Norway. Similar in concept to the MPF, but land-based, this program currently provides for the storage of supplies and equipment for an airlifted force at secure locations. The program represents a capability similar in scope to that of an MPS squadron. Forward positioning of equipment produces tremendous savings, both in terms of reaction time and strategic airlift sorties.

A CINC or subordinate commander may also require Marine forces that do not possess all elements of a MAGTF; thus, they are not given a MAGTF designation. Examples are installation security forces, engineer and medical support teams for humanitarian operations, deployments for training, law enforcement operations, and mobile training teams. In these cases, forces will be designated by the name of the senior headquarters having operational control; e.g., 1st Combat Engineer Battalion (Rein), 1st Marine Division.

Chemical/Biological Incident Response Force (CBIRF). CBIRF is manned, trained, and equipped to respond to

chemical or biological terrorist incidents. CBIRF is a national asset capable of rapid response to chemical or biological incidents. When such an incident occurs, CBIRF immediately deploys to the affected site to provide initial relief effort; security and isolation of the affected site; detection, identification and limited decontamination of personnel and equipment; expert medical advise and assistance; and service support assistance. Additionally, CBIRF assists federal, state, and local response forces to develop chemical and biological incident training programs.

Riverine Forces. The U.S. Marine Corps riverine forces, resident in US Marine Corps Forces, Atlantic is DoD's only conventional riverine capability. This capability is worldwide deployable and supports all regional Combatant Commanders.

3.10.1.1.7 Standing Joint Task Force Headquarters (SJTF HQ)

Recognizing that the key element in joint operations is the Joint Task Force Headquarters, CMC directed COMMARFORLANT/Command General II MEF, and Commanding General Marine Corps Combat Development Command to produce a plan that resulted in the Marine Corps providing a fully capable, expeditionary, Joint Task Force (JTF) HQ organized and equipped to move out on a moment's notice to meet the uncertainties of a chaotic new world. With the completion of Phase I of the resulting three-phase campaign plan; COMMARFORLANT has established the lead elements of a SJTF HQ at Camp Lejeune, NC. The SJTF is focused on joint issues and serves as the standing core of any JTF HQ that USCINCA, USCINCSOUTH, or USCINCEUR may ask their Marine Components to form.

3.10.1.1.8 Marine Expeditionary Units (Special Operations Capable)

COMMARFORLANT and COMMARFORPAC maintain forward-deployed MEU(SOC)s in the Mediterranean, Persian Gulf region, and Japan. In addition to conventional capabilities, the MEU(SOC) is augmented with selected attachments to provide enhanced capabilities. These special capabilities include:

- Close Quarters Battle
- Specialized Demolition Operations
- Clandestine Reconnaissance and Surveillance
- Maritime Interdiction Operations
- Direct Action
- Gas and Oil Platform Operations
- Tactical Recovery of Aircraft and/or Personnel
- In-Extremis Hostage Recovery
- Clandestine Recovery Operations

3.10.1.1.9 Marine Security Guard Battalion

The Marine Corps also provides forces to the Department of State for embassy security. Organized into the Marine Security Guard Battalion, these Marines are currently assigned to 121 diplomatic posts in 115 different countries throughout the world.

3.10.1.2 Marine Corps Reserves

In addition to active forces, force expansion is made possible by the activation of the Marine Corps Reserve, which, like the active forces, consists of a combined arms force with balanced ground, aviation, and combat service support units. Organized under the COMMARFORRES, units of this command are located at 191 training centers in 46 states, Puerto Rico, and the District of Columbia.

Over the past several years, the Marine Corps Reserve has been closely integrated with the active component in our Total Force concept. The Reserves provide individuals and specific units to augment and reinforce active capabilities.

Marine Forces Reserve (MARFORRES), located in New Orleans, Louisiana, is the Headquarters command for all the Marine Reservists and Reserve units located throughout the United States. It is commanded by a Major General with a Brigadier General serving as his Deputy Commander. The MARFORRES staff provides policy, guidance, direction and support to 104,000 Reserve Marines all across the United States. The four Major Subordinate Commands of MARFORRES are the 4th Marine Division (4th MARDIV), the 4th Marine Aircraft Wing (4th MAW), the 4th FSSG (4th FSSG), and the Marine Corps Reserve Support Command (MCRSC) in Kansas City.

The mission of the MARFORRES is to provide service to the community, augment and reinforce active Marine forces in time of war, national emergency or contingency operations, and provide personnel and operational tempo relief for the active forces in peacetime.

The MARFORRES has Centers located mainly in the CONUS. The Centers are interconnected by dedicated T1 links between major centers and an Internet Protocol (IP) frame relay network that provides service from 64 Kbps to 128 Kbps typically for Companies, Air Wings, and Battalions. The capacity of the Reserve network is currently being upgraded. Additional T1s are being added between the major locations and service to the smaller Centers is being upgraded from 64/128 Kbps to 256/512 Kbps. The Figure below illustrates an overview of the Reserve network.
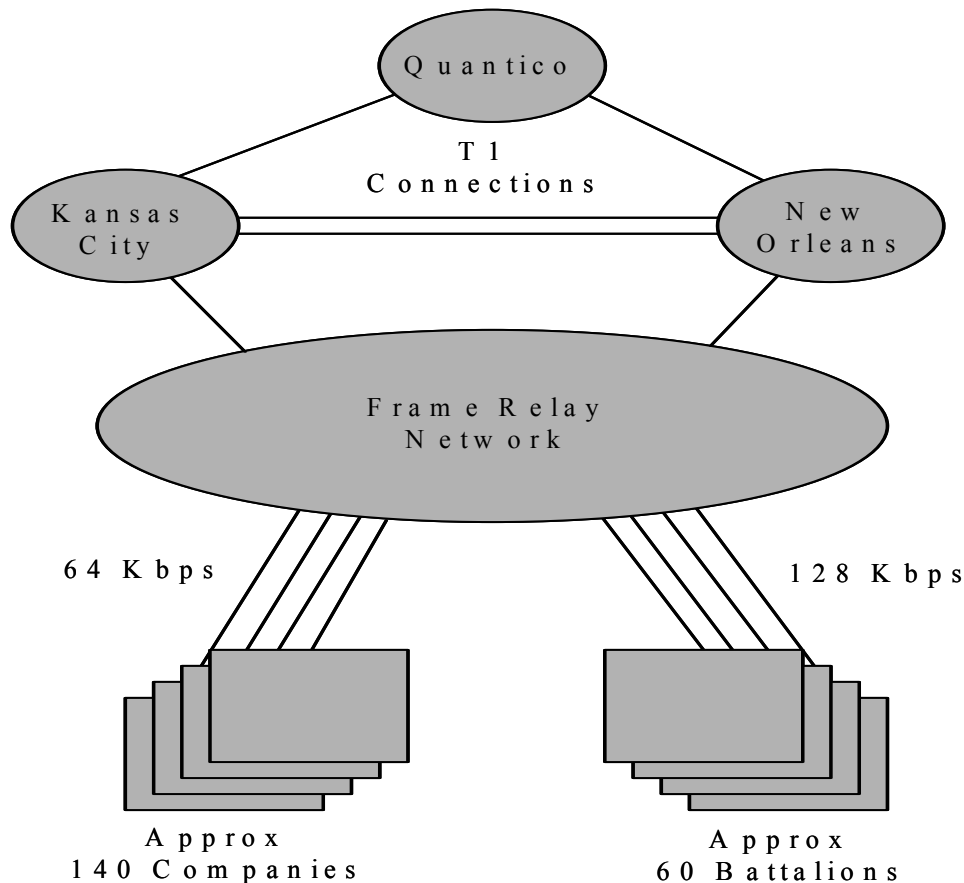
Figure 37 Reserve Network Overview

3.10.1.2.1 Reserve Center Locations

Figure 38 generally depicts the locations and distribution of Marine Corps Reserve Centers. Not all Centers are identified by name in the map but it is intended to show general locations and distribution. APPENDIX B MARINE

CORPS RESERVES UNITS provides detailed information regarding Marine Corps Reserve units, including locations and approximate numbers of NMCI seats for each.
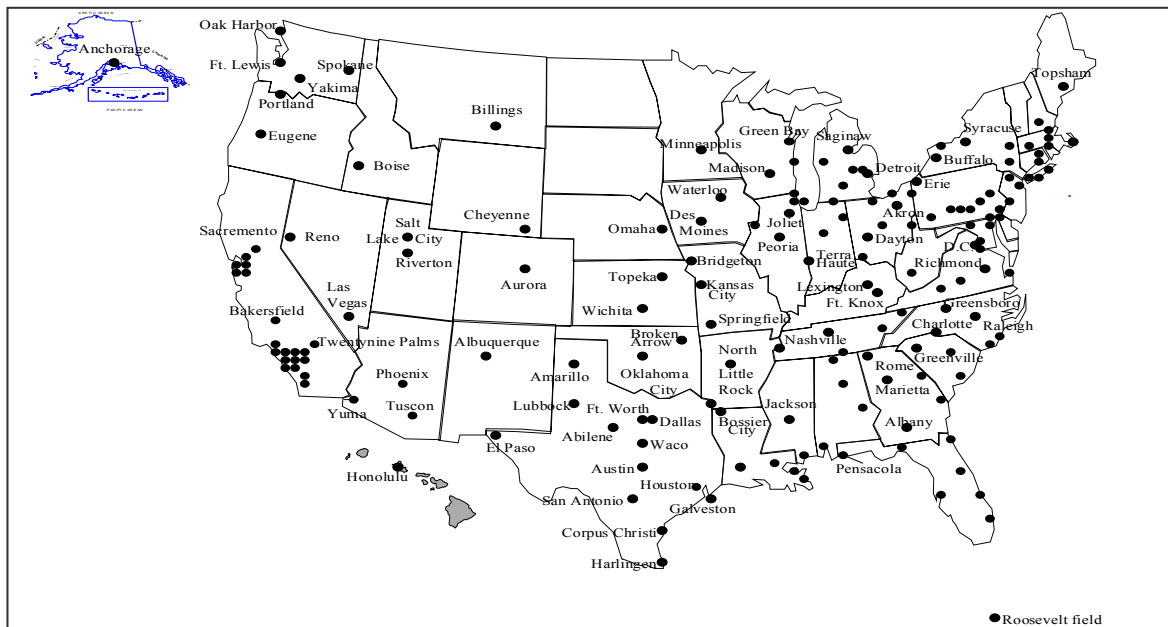
Figure 38 Reserve Center Locations

3.10.1.2.2 Reserve Seat Requirements

An estimation of the number of required Reserve seats for each Reserve site is enumerated in APPENDIX B MARINE CORPS RESERVES UNITS. The estimates are based on averages for Reserve units by type as detailed in Table 48.

Type USMC Reserve Units	Average NMCI seats per unit
Air Wing	200-300
Air Squadron/Group	200-300
Group	200-300
Battalion	25-45
Company	10-30
Platoon	10
Battery	10

Table 48 USMC Reserve Unit IT User Seat Requirements

3.10.1.3 Supporting Establishment

The Supporting Establishment – approximately 30,000 Marines -- staff our 16 major bases, training activities, formal schools, the Marine Corps Recruiting Command, the Marine Corps Combat Development Command, the Marine Corps Systems Command, and Headquarters, U.S. Marine Corps. The Supporting Establishment's contributions are vital to the overall combat readiness of the Marine Corps.

3.10.1.4 Recruiting Command

The Marine Corps Recruiting Command (MCRC) is responsible for developing, justifying, planning, organizing, conducting, and administering total force personnel procurement programs (less prior service Reserve) to meet the manpower needs of the Marine Corps.

MCRC accomplishes the mission with approximately 2,650 production recruiters and 2,100 support personnel. The headquarters for MCRC is located at Quantico, Va. and is commanded by a major general. The command is divided into two regions; Eastern Recruiting Region, Parris Island, S.C. and Western Recruiting Region, San Diego, Calif. Both regions are commanded by brigadier generals. Each Region is divided into three Marine Corps Districts commanded by colonels. ERR consists of the 1st MCD in Garden City, N.Y., the 4th MCD in Harrisburg, Penn., and the 6th MCD at MCRD Parris Island, S.C. WRR has the 8th MCD in New Orleans, La., the 9th MCD in Kansas City, Mo., and the 12th MCD at MCRD San Diego, Calif. Each District has between seven to nine Recruiting Stations commanded by a major. There are 48 RSs across the nation. Each RS is divided into 9-12 Recruiting Substations headed by a staff noncommissioned officer who has one to five recruiters working for him or her.

Marine Corps Recruiting Headquarters, East and West Recruiting Regions, Districts, and 48 Recruiting Stations are interconnected by a four Service Recruiting Services Network that is administered by the Army. The network is an IP frame relay WAN that provides T1, 256 Kbps, and 16 Kbps service between Headquarters and the two Regions, the two Regions and the Districts, and the Districts and Recruiting Stations, respectively. The 256 Kbps service is being upgraded to 512 Kbps and the 16 Kbps service is being upgraded to 64 Kbps or 128 Kbps to some Stations. The network provides access to the MEPCOM. This connection is required to provide centralized processing of all military recruits. Figure 39 is a connectivity diagram of the USMC domain of the Recruiting Services Network.
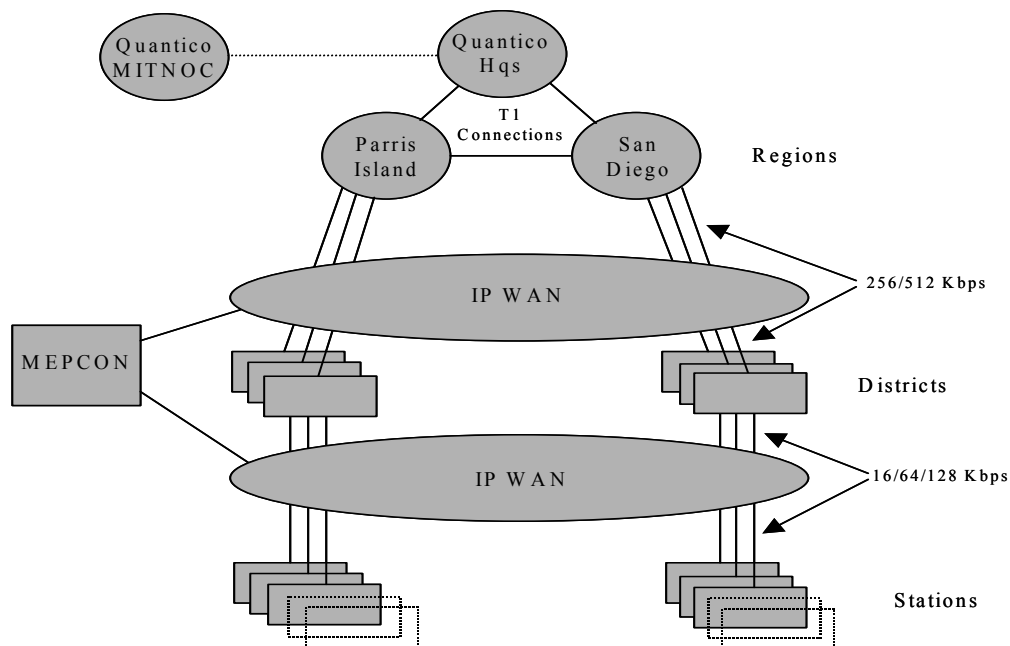
Figure 39 Marine Corps Recruiting Network Connectivity

3.10.1.4.1 Recruiting Locations

Figure 40 depicts the locations of the Recruiting headquarters, Regions, Districts, and Stations.

MARINE CORPS RECRUITING COMMAND

9TH MCD
Kansas City, MO

1ST MCD
Garden City, NY

RS Seattle
RS Portland
RS TwinCities
RS Milwaukee
RS Albany
RS Portsmouth
RS Buffalo
RS Detroit
RS Lansing
RS Springfield, MA
RS New York, NY
RS New Jersey, NJ
RS Baltimore, MD
RS Sacramento
RS Salt Lake City
RS Des Moines
RS Chicago
RS Indianapolis
RS Cleveland
RS Pittsburgh
RS Harrisburg
RS San Francisco
RS Denver
RS Cincinnati
4TH MCD
New Cumberland, PA
12TH MCD
San Diego, CA
RS Los Angeles
RS Orange
RS San Diego
RS Saint Louis
RS Kansas City
RS Louisville
RS Charleston
RS Richmond
Marine Corps
Recruiting Command
RS Raleigh
RS Nashville
RS Columbia
Western Recruiting Region
RS Phoenix
RS Albuquerque
RS Oklahoma City
RS Little Rock
RS Atlanta
Eastern Recruiting Region
6TH MCD
Parris Island, SC
RS Dallas
RS Montgomery
RS Jacksonville
RS Houston
RS New Orleans
RS Orlando
RS San Antonio
RS Ft. Lauderdale
8TH MCD
New Orleans, LA

UNITED STATES MARINE CORPS
RECRUITING COMMAND

★ Recruiting Regions (2)
■ Marine Corps Districts (6)
○ Recruiting Stations (48)

Western Recruiting Region
Eastern Recruiting Region

Figure 40 Marine Corps Recruiting Locations

3.10.1.4.2 Recruiting Seat Requirements

appendix C Marine Corps Recruiting Commands identifies the seat requirements for the Recruiting Headquarters, Regions, Districts, and Stations. Averages are used for the Recruiting Stations and actual numbers may vary slightly by site.

3.10.1.4.3 Marine Corps Total Force

Figure 41 depicts the Marine Corps Total Force. There is a direct relationship between the size of the Marine Corps and the contribution made to our national defense. Large scale deployments, operations, and training exercises with allies are part of our training and presence requirements in peacetime. About 23 percent of our operating forces are forward-deployed during peacetime, which predicates a high deployment tempo and a corresponding CONUS rotation base. As the U.S. retains a desire to maintain stability in areas where we have significant interests, the requirement for forward-deployed forces will continue.
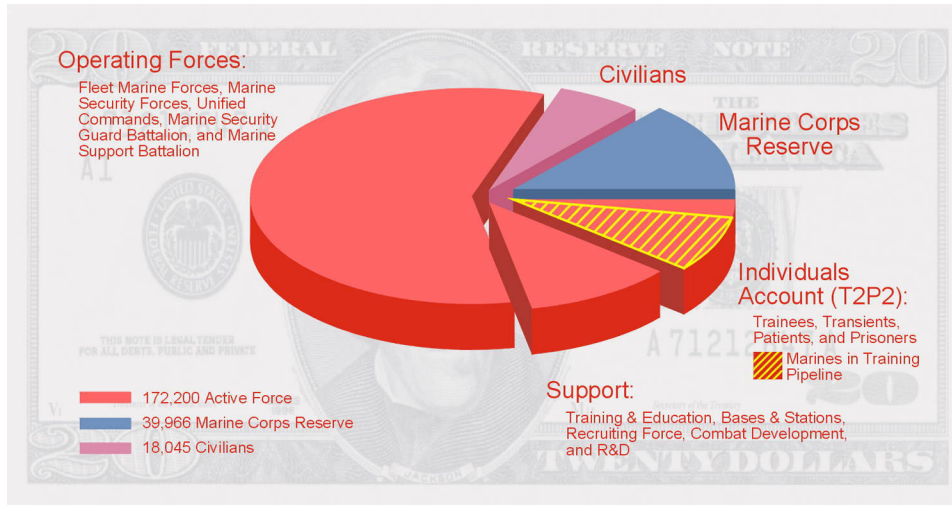
Figure 41 Marine Corps Total Force

(FY97 Authorizations)

Active Force (Operating Forces and Support): 174,000
Marine Corps Reserve: 42,000
Civilians: 18,650

Data points for chart:

Operating forces --	112,124
Support --	30,743
T2P2 --	31,133
TOTAL	174,000

Marines in Training -- 25,160

3.10.2 Operational Activities at Phases 1-7

During peacetime (Steady State) operation – Marine Corps Operational/Tactical functions, activities involve routine information exchange across the spectrum of networks (NIPRNET, SIPRNET, Defense Switched Network (DSN), Defense Red-Switched Network (DRSN), Internet) for command and control purposes. The primary focus is on Operational Plan development, information gathering, training activities and command supervision of subordinate elements. Additionally, for purposes of this DRM, steady state operations include routine deployments of Marine Forces, training exercises, and military operations other than war (MOOTW).

MOOTW include humanitarian/natural disaster relief and peacekeeping operations. Operations of this type make up a large percentage of the real-world contingencies to which the Marine Corps must respond. Each presents unique challenges that must be supported by NMCI infrastructure and services. Generally speaking, there is a proportionally greater requirement for unclassified but sensitive communications to support MOOTW. There is a significant requirement to interface with non-governmental organizations such as the American Red Cross, and non-DoD organizations such as the Federal Emergency Management Agency (FEMA). Further, interactions with U.S. state agencies, organizations and foreign governmental organizations are routine during MOOTW.

Marine Corps units that are designated as "operating forces", approximately 44% of the total end strength in CONUS and Hawaii, utilize workstations (desktop and laptop computers) that will be embarked and deploy with these units to support exercises and real world contingencies. When operating in a garrison environment, these users receive standard and selected optional NMCI services from the wallplate.   Operational/Tactical steady state activities require: assured organizational message delivery via DMS; secure classified and unclassified but sensitive internet and intranet connectivity for data access and dissemination; E-mail (accessible from garrison and remote

locations); video teleconferencing and white boarding; secure classified and unclassified but sensitive mobile and fixed site voice connectivity; and a robust IA program. IT requirements remain relatively stable with predictable infrastructure demands during peacetime. However, periodic surge in infrastructure stress are common and associated with various training exercises, deployments, and real-world contingencies that include combat operations and operations other than war. IT capabilities must provide redundancy to enhance reliability and to meet moderate surge requirements of peacetime operations.

Steady State, Phase 1 Performance Measures:
- 95% of serialized operational immediate message traffic is delivered within the timeliness requirements specified.
- 95% of serialized priority messages are delivered within the timeliness requirements specified.

Phase 1 baseline Service-level indicator is SLI – 2

During a surge to one MTW – The Operational/Tactical focus shifts from steady state routine to a focus on a specific theater. Notional response to the first MTW (west) would involve early employment of one or two afloat MEUs to conduct non-combatant evacuation operations and other actions necessary to prepare for introduction of follow-on forces into theater. Simultaneously, pre-deployment and strategic deployment of two MEFs would begin execution and one or two Maritime Prepositioned Ships (MPS) squadrons execute movement to the effected theater. In response to a Pacific contingency, MAGTF forces would most likely be task organized using forces under the command of MARFORPAC, with I MEF (Camp Pendleton, El Toro, Miramar) and III MEF (Okinawa, Iwakuni) providing the preponderance of combat and combat support capabilities.

As Marine forces prepare for deployment, Marine Corps IT specialists within the deploying organizations prepare network assets, including tactical servers and garrison workstations, for the task at hand. New network segments will be established and connected to the NMCI infrastructure. Deploying servers will be configured and pre-loaded with necessary software patches and data stores. Additional load on help desk services will result from this increased activity with likely requirement to surge to 24X7 support for many supported units. Other NMCI services will be stressed due to a greatly increased utilization of SIPRNET, NIPRNET, voice communications, official message traffic (DMS), VTC and e-mail. Additionally, operational forces will require exchange of very large digital files (imagery, database, etc.). All other IT services continue at an increased level. Service assurance becomes more critical than during the steady state. Requirements for IT resources that support mobile customers increase.

As active forces conduct pre-deployment operations, they are augmented by mobilized Marine Corps Reserves that have specific skill sets required to support the contingency at hand. Additionally, other reserve forces flow in to backfill critical garrison billets vacated by deploying active units. Reserve forces called to active duty are processed through reserve centers and mobilization sites located throughout the continental United States. As these sites activate to support processing of reserve force personnel, network utilization, especially the use of SIPRNET, increases dramatically. Activated reserves tasked to backfill deploying forces arrive on site with no supporting IT hardware or software. Since deploying active forces embark with a large percentage of desktop hardware, demand for additional desktop resources will be significant in order to integrate backfill reserve forces. In this notional scenario, mobilization and integration of deploying and backfill reserves forces is accomplished within a three-month period.

During strategic deployment, approximately 1/3 of one deploying MEF would embark aboard amphibious shipping. The remainder would constitute the fly-in echelon. Marines embarked aboard Navy shipping receive network services from the shipboard IT-21 environment. Reachback into the garrison infrastructure will begin immediately and continue as the amphibious force transits to the first MTW. Fly-in forces will establish reachback connectivity to the garrison environment immediately as they marry up with their equipment in theater. Regardless of mode of transportation, reachback for deploying forces is critical to support operational planning, intelligence, logistics, and personnel administration.

Surge to One MTW Performance Measures:
- 100% of serialized operational immediate message traffic is delivered within the timeliness requirements specified.
- 100% of serialized priority messages are delivered within the timeliness requirements specified.
  Network services are available to users 98% of the time

With heightened pre-conflict operations coincident with a surge to two MTWs based on a second geopolitical event – (phases 3 and 4) – Strategic deployment of Marines and sailors from I and III MEF is largely completed. Direct load on NMCI services resulting from these, now forward deployed forces has reduced significantly. Indirectly, these forces continue to stress the system as they reach back through tactical interfaces (STEP, TELEPORT, or direct satellite link) to access critical data stores and systems on the NMCI infrastructure. Additionally, classified and sensitive but unclassified e-mail, organizational message traffic, and VTC between deployed forces and those directly connected to the NMCI will remain at a much higher than average level.

With the rise of a second MTW in an eastern theater, pre-deployment and strategic deployment of Marines and sailors from II MEF (Camp Lejeune, Cherry Point) is executed. The description of activities involved in responding to MTW 1 is essentially repeated for MTW 2. One afloat MEU responds almost immediately. MPF Shipping and II MEF forces begin to converge on the area. Additional USMC Reserve forces are mobilized to augment deploying active forces and to backfill critical vacated garrison billets. Activity levels for those units directly supporting MTW 2 will increase dramatically and regional stress on NMCI services will spike on the east coast.

In general, garrison IT efforts are split between sustainment operations supporting forces engaged in MTW 1 and supporting pre-deployment/strategic deployment in response to the second regional contingency. IA efforts become critical as visibility of military operations increases the frequency, duration, and quality of internal and external attacks against the NMCI infrastructure. There is a rapid surge in IT demand on the east coast, including an increased demand for exchange of very large digital files (imagery, database, etc.). This is the beginning of the period of maximum stress on the Operational/Tactical IT infrastructure. Record message traffic and digital data exchange again stress IT systems. All other IT functions continue at maximum levels. Service assurance becomes more critical than in the steady state or during the rise in IT loading to support one MTW scenario. Demands on resources increase while at the same time the criticality of the IT resources availability increases. Requirements for IT resources that support mobile customers increase even further.

Under this notional scenario, the CINC's detailed communications planning in support of MTW 2 requires reconfiguration of firewalls aboard all Marine Corps bases to enable implementation of an enhanced intelligence collection, analysis, and dissemination capability. Implementation of this network engineering change requires the NMCI service provider to respond immediately based on direction received from the appropriate USMC agent.

Performance Measures during surge to two MTWs:
- 100% of serialized operational immediate message traffic is delivered within the timeliness requirements specified.
- 100% of serialized priority messages are delivered within the timeliness requirements specified. Network services are available to users 98% of the time

With the rise to sustained operations at two MTWs – Operational/Tactical forces from both coasts have completed strategic and operational deployment and are currently employed in both theaters of war. The primary stress on NMCI services from operational forces results from a sustained, high level of reachback activity supporting operational planning, intelligence, logistics, and personnel administration. Additionally, those operating forces that remain in the garrison environment sustain a high level of activity supporting deployed forces. 24X7 operations are common and NMCI support must be available to handle expanded work hours.

Under this notional scenario, networks supporting DoD agencies come under a coordinated, sustained, state sponsored attack during phase 5. NMCI services are operating at a peak load at this time. One aspect of this network attack that directly effects Marine Corps operations is the introduction of a destructive virus into garrison SIPRNET network segments. As a result, access to critical data stores necessary to support deployed forces is unavailable. In response to this threat, the Marine Corps directs segmentation of select base networks from external networks until the virus is eradicated internal to the Corps, and measures are implemented to ensure minimal chance of re-infection. Additionally, network changes are implemented to provide interim connectivity to deployed forces using direct satellite links. These engineering changes require the NMCI service provider to immediately execute directions received from the appropriate Marine Corps agent.

As hostilities come to a close in the first MTW, select USMC forces swing from MTW 1 to MTW 2 in order to accelerate resolution in the second theater. These forces will unplug from current Deployed networks, transit to new theater, and plug back into the global information grid. Immediate reachback to NMCI resources is essential and network stresses will shift as these swing forces now access the garrison infrastructure through MTW 2 STEP sites.

For sustained operational transition to a completion of hostilities – As conflicts in both theaters of war are resolved,

focus of effort for operational forces shifts to reconstitution of forces and redeployment of those forces not required for stability operations. From an operating forces perspective, there is a ramping down of stress on most IT services. However, as forces redeploy into the garrison environment, there will be an increased level of activity for network operations and helpdesk functions as these forces plug back into the NMCI infrastructure at the wallplate. Reserve forces will demobilize, and return to their parent USMCR organizations. Demand for NMCI services will gradually return to steady state as focus of effort shifts to preparations for the next contingency. Efforts revolve around operational plan development, information gathering, training activities, and command supervision of subordinate elements.

At the completion of hostilities and the return to steady-state operations – Return to peacetime steady state will occur slowly and over an extended period of time. Spikes in systems usage will occur as peacetime force rotations and deployments will occur concurrently with redeployment from MTW(s). Force (and asset) reconstitution will continue to stress systems for several months after MTW(s) conclusion until return to peacetime steady state can be achieved.

3.10.3 Specific IT Support

IT Support to the Operational/Tactical function includes:

- Record message traffic/ assured message delivery,
- Digital data exchange,
- Secure classified and secure unclassified yet sensitive internet and intranet connectivity for data dissemination,
- E-mail accessible from garrison and remote locations,
- Video teleconferencing and white boarding,
- Secure classified and secure unclassified yet sensitive mobile and fixed site voice connectivity,
- Robust IA programs.

During peacetime operations, there is ongoing deliberate planning with steady state usage of MAGTF II/ Logistics Automated Information System (LOGAIS) family of systems. Units utilize MAGTF Deployment Support System II (MDSS II) to interface with numerous systems to maintain databases containing force and deployment data, and retrieve information for reporting. MDSS II interfaces with MAGTF II for deliberate TPFDD development/maintenance, which, in turn is uploaded into GCCS/JOPES as part of the ongoing deliberate planning process for force deployment planning and execution. Information exchange and SIPRNET access is at steady state. Classified message traffic and Secure Telephone Unit (STU) III usage is at a steady state.

During a surge to one MTW there is a rapid increase in IT demands; a shift from deliberate planning to crisis planning demands timely, accurate information and data exchange. Units dramatically increase use of MDSS II to develop unit embarkation information for upload into MAGTF II. Increase demand on access to other systems - Computer Aided Embarkation Management System (CAEMS), Transportation Control Automated Information Management System (TC-AIMS), Computer Aided Load Manifest (CALM), Asset Tracking for Logistics and Supply System (ATLASS), among others. Increase demand on use of MAGTF II system for development of TFPDDs and other deployment data; increase demand on GCCS/JOPES for passing TPFDD information for CINC validation and transportation scheduling with supported and supporting CINCs. Increase demand on SIPRNET access for information exchange, information search, reporting requirements. Increased demand for SIPRNET connectivity with already deployed units for information and reporting. Increase use of organizational SIPRNET and NIPRNET websites for rapid information posting. Classified and unclassified message traffic and STU III usage increase dramatically. Supporting establishment and MARFORRES use of systems for deployment, support planning, and execution will increase dramatically.

With heightened pre-conflict operations coincident with a surge to two MTWs based on a second geopolitical event system usage will be at a high, but steady state. TPFDD development continues for follow on forces and sustainment packages. Supporting establishment system usage will increase as Reserve force throughput ramps up. Use of deployment scheduling systems will remain high as war reserve stocks/sustainment packages are withdrawn and shipped to theater.

With the rise to sustained operations at two MTWs there will be a surge in systems usage as force deployment planning & execution occur for the second MTW occur. TPFDD development/refinement for the second MTW is additive to ongoing the first MTW efforts. Surge is not as dramatic as preparation for and execution of 1st MTW

due to systems already operating and operator proficiency achieved.

For sustained operational transition to a completion of hostilities system usage will be at a high, but steady state, with more emphasis on interface with sustainment/support systems/agencies.

At the completion of hostilities and the return to steady-state operations MTW 1 then 2 conclusion will cause a surge in all systems use as redeployment will, in many cases, be more difficult, that deployment. TPFDD development and asset tracking/accountability will stress all force (re)deployment movement scheduling systems.

The following figures graphically depict the impact that USMC Operational/Tactical functions will have on the six, key NMCI service groupings (Security, Enterprise Network Management, Help Desk, Wide Area Network Connectivity, Base Area and LAN Services, and Video Teleconferencing) during the notional DRM scenario. The supporting data used to develop these graphs is presented in Table 49. The most notable stresses occur for WAN, Network Management, and VTC.
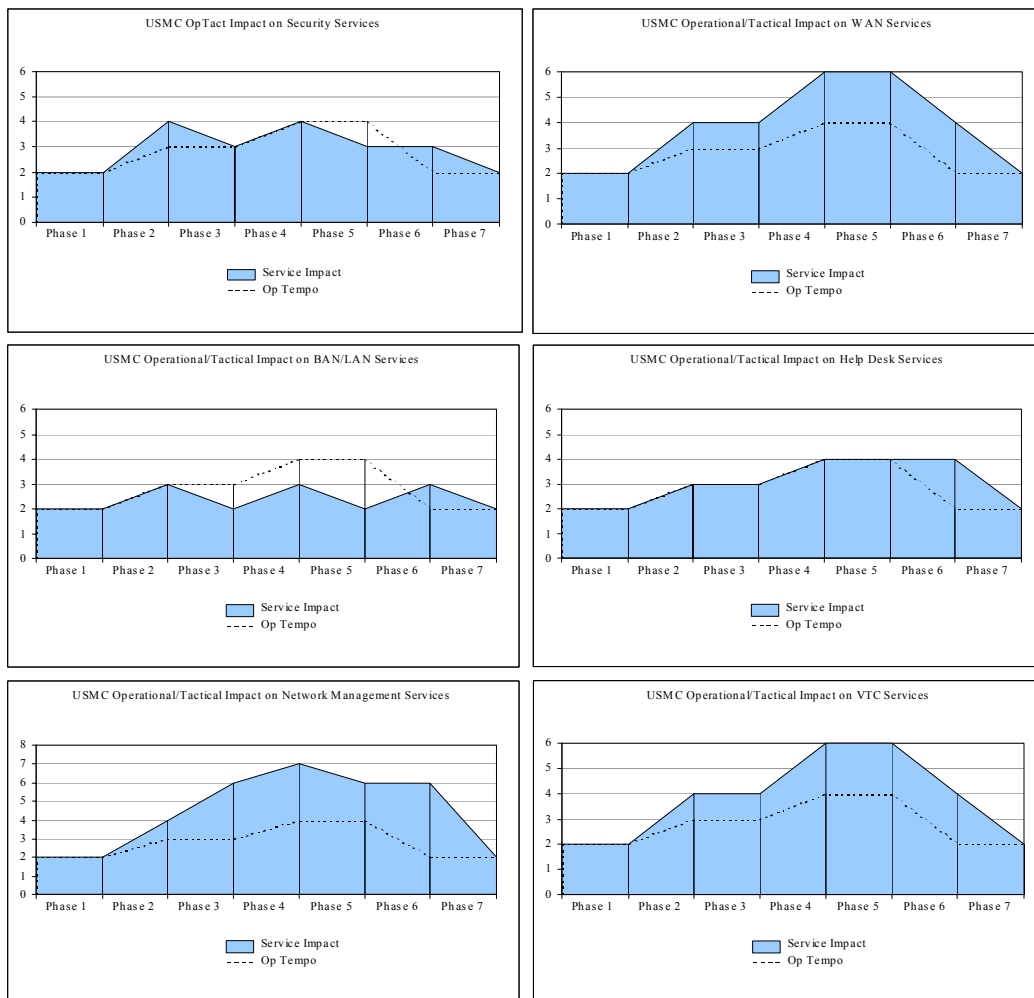
Figure 42 Individual Service Impacts for Operational/Tactical

The operational/functional IT managers estimated stress data for the list of 13 NMCI services introduced in chapter 2. The data includes the six graphically depicted above plus seven others. The complete set of data is presented in the NMCI Services Impact Worksheet below.

USMC Operational/Tactical

Network Services	Phase 1 Peacetime Ops	Phase 2 Deploy MTW1	Phase 3 Employ MTW1	Phase 4 Deploy MTW2	Phase 5 Employ MTW1/2	Phase 6 Redeployment	Phase 7 Peacetime Ops
Security Services: firewalls, intrusion detection, availability, encryption.	Steady State	2	-1	1	-1	0	-1
Wide Area Network Connectivity: Access to DISN (SIPRNET & NIPRNET); commercial WAN; Internet. Includes capacity, functionality, and assurance.	Steady State	2	0	2	0	-2	-2
Base Area and Local Area Network Services: Voice, video and data; End-user to WAN POP; Assumes classified and unclassified; Includes availability, capacity, functionality, and assurance.	Steady State	1	-1	1	-1	1	-1
Desktop Hardware and Software: Provisioning / relocating of end user desktop suites.	Steady State	1	0	1	0	1	-3
Help Desk and Technical Support: Touch labor & support to users.	Steady State	1	0	1	0	0	-2
Enterprise Network Management: Includes perf mngt, directory, DNS, connectivity or accounts (adds/moves/ deletes), VPN spt, sys integration, config mngt, capacity planning; class and unclass.	Steady State	2	2	1	-1	0	-4
Organizational Messaging: AUTODIN & DMS	Steady State	2	-1	1	-1	0	-1
Email: Capacity, availability, classified and unclassified.	Steady State	2	-1	1	-1	0	-1
Web Services: Web enabled applications hosting; search engines; news group services; web site hosting.	Steady State	1	1	1	0	-1	-2
Remote Telephone Access	Steady State	1	-1	1	-1	1	-1
Video-teleconferencing: Including capacity, availability, management and set up of sessions.	Steady State	2	0	2	0	-2	-2
Telephony: Switched voice, voice over data, cellular service, pagers.	Steady State	2	-1	2	-1	1	-3
Training: System administrator, end user training.	Steady State	1	0	1	0	0	-2
Weighted Average of Impact on NMCI Services. First cell is Steady State SLI.	2.00	3.55	3.40	4.65	4.15	3.95	2.00

Table 49 USMC Operational/Tactical

The Marine Corps Operational/Tactical mission requirements previously described, during steady state and through the phases of the DRM scenario, have varying priorities as determined by the command authority. The IT services that support these mission requirements similarly have priorities that closely mirror the mission priorities. Those priorities must be reflected in the Performance Measures by which the service provider solutions are evaluated and by which the ultimate NMCI service is measured. The Marine Corps Operational/Tactical area has identified the following priorities along with their corresponding suggested performance measures.

Priority	Required of NMCI Services	Performance Measures
1	Availability/reliability of supporting infrastructure and services. Greatly increased when forces engaged in real-world contingencies. Includes highly responsive reachback SPT to deployed forces.	Network Availability, Access to Required Resources.
2	Security of information and network resources. Requirement increases greatly when forces engaged in real-world contingencies.	Attack Blocking, Attack Detection, System/Information Integrity, Recovery Time, Threat Response Time.
3	Interoperability w/Joint Forces, non-DoD Governmental Organizations, NGOs, PVOs. Includes support for legacy systems.	Interoperability, Adequacy.
4	Robust Surge Capacity. Specific requirement for NIPRNET, SIPRNET, VTC, e-mail, DMS, and Help Desk. OpTempo Dependent.	Latency, Throughput, Processing, Storage, Adequacy.
5	Operational Direction in Response to Mission Requirements or Command Direction	Timeliness, Adequacy.

Figure 43. Functional Area Performance Measures

Given the stated IT support required to support Marine Corps Operational/Tactical users, the measures of effectiveness described in Figure 43 provide the specific areas that must be met by the NMCI services to ensure satisfactory performance of functional mission requirements. All are interrelated, and vary in response to the operational environment. Though Operational Direction is listed last (priority 5), it is absolutely critical, and in certain circumstances becomes the most important requirement as it directly effects the Marine Corps' ability to respond to the rapidly changing environment associated with fighting and wining our nations wars.

3.10.4 Supported Systems.

For the Operational/Tactical function, supported systems include C2-DMS, DSN, NIPRNET, AUTODIN, Intelligence-SIPRNet, Intellink, GCCS, JWICS, and Electronic Key Management System (EKMS).

The systems that are used are the same in all phases. For operational planning, force deployment planning and execution (for the USMC) the key is the MAGTF AIS systems and their interface with GCCS/JOPES. This is the Planning and TPFDD key to the USMC's expeditionary deployment success. SIPRNET access is a critical asset for operational forces. The amount of information available from all the various websites, plus the reporting that is done via this medium, makes this almost indispensable. The SIPRNET/GCCS/JOPES will be in high demand throughout this functional scenario. It is often quicker, and more reliable, to send SIPRNET e-mail than it is to place a secure call using a STU III. It is also often times more reliable than sending a classified Naval message. The heavy reliance on the classified computer systems has become institutional/cultural.

3.10.5 Geographic Information.

For the Operational/Tactical function during Steady State conditions, the major concentrations of C2 infrastructure revolve around the peacetime garrison locations of the MEF Headquarters in Camp Lejeune, NC; Camp Pendleton, CA; and Marine Forces Pacific, Camp Smith, HI. The preponderance of activity will be concentrated at the MEF headquarters supporting the CINC responsible for the particular MTW Area of Operations. During a surge to one MTW, IT services will also be required at the air and seaports of embarkation/debarkation for support to deploying

forces. As operations begin to encompass two MTWs, IT requirements spread to all major military centers. For the draw down to steady state conditions the Operational/Tactical geographical focus shifts to the garrison locations of the MEFs.

3.10.6 Other USMC Operational/Tactical Supporting Infrastructure Information

3.10.6.1 Marine Corps Infrastructure Locations

Figure 44 depicts the location of Marine Corps bases, and stations. The locations are concentrated in the CONUS and Asia.

Figure 44 Marine Corps Locations

3.10.6.2 Marine Corps Enterprise Networks

Figure 4546 and Figure 4748 illustrate the high level configurations of the current NIPRNET MCEN and SIPRNET MCEN. The NIPRNET MCEN identifies the POP links connecting bases to the NIPRNET. Also shown are the BANYAN VINES dedicated links used to support e-mail and other services.
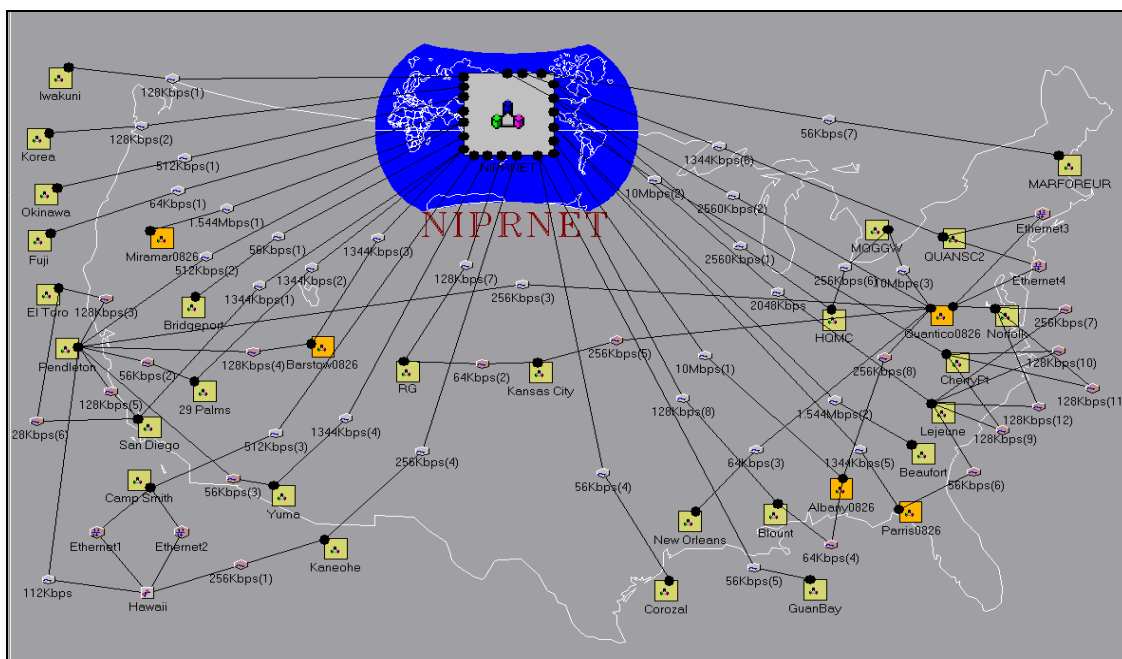
Figure 4546 NIPRNET MCEN

In the figure below, the POP link data rates for the SIPRNET MCEN are identified. The currency of these rates has not been verified. (Disregard the numbers that are in parentheses.)
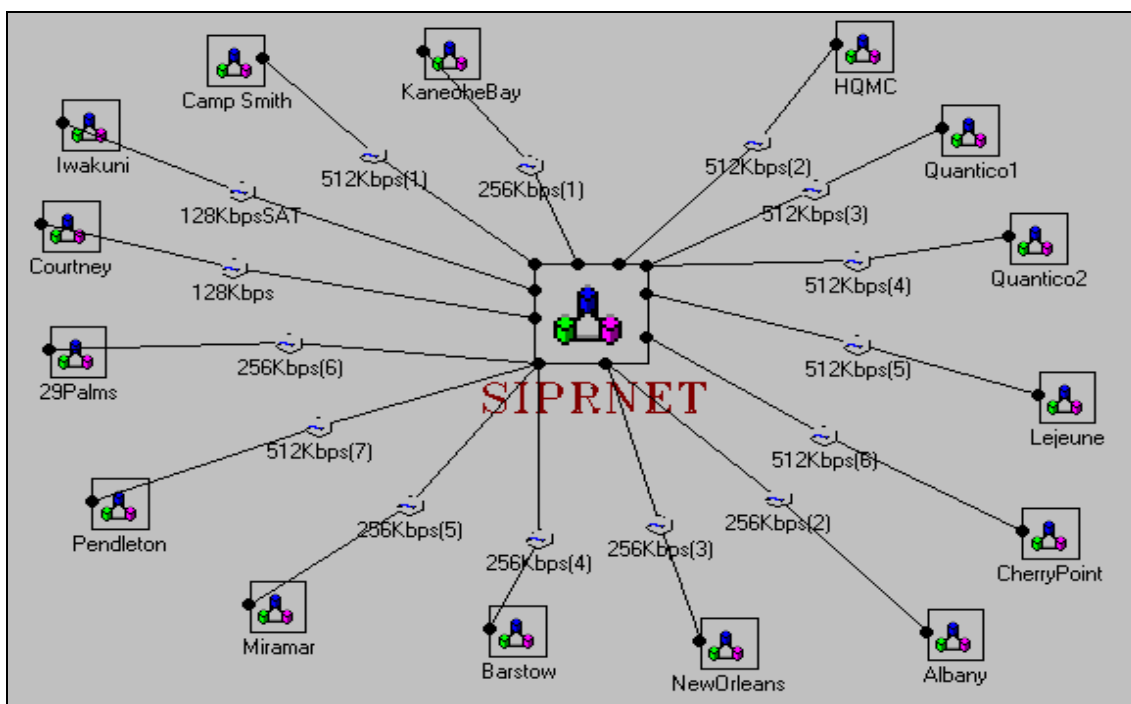
Figure 4748 SIPRNET MCEN

3.10.6.3 Joint Simulation System (JSIMS) Overview

The DoD is currently pursuing the development of the Joint Simulation System as a capability to further support the Services Operational/Tactical function, including mission planning, exercise support, training, and acquisition.

US national military strategy is shaped by the dynamic, global interests of the US in the post-cold war era. US military force levels, structure, and doctrine continually respond to new global engagement requirements as they evolve. The effectiveness of these responses is directly related to the training that precedes them. Realistic and relevant training is an essential component of creating and maintaining readiness. Training brings its own set of challenges mirroring many of the broader challenges of national military strategy. These training challenges stem from several sources:

- Joint and multinational character of contemporary military activities.
- Numerous, nontraditional applications of military power.
- Requirement for rapid planning, rehearsal, and response to contingency operations.
- The need to improve efficiency and effectiveness in training.

JSIMS will be the primary M&S tool to support future joint and Service training, education, and mission rehearsal. At initial operational capability (IOC), JSIMS will focus on training joint force commanders (commanders of unified commands and prospective joint task force commanders) and staffs, and principal subordinate Service and functional component commanders and staffs) in operational and strategic-theater joint tasks. JSIMS will be progressively developed into a robust, interactive joint synthetic battle space (JSB) for training strategic-national joint tasks and joint and Service tactical tasks in all phases of operations (mobilization, deployment, employment, sustainment, and redeployment). At full operational capability (FOC), JSIMS will have a comprehensive capability to satisfy a full range of training, education, doctrine development and mission rehearsal needs. The JSIMS JSB will also be used to support other training and preparation for military activity as identified in the National Military Strategy and Joint Publication 3-07.

3.10.6.3.1 General Capabilities

JSIMS will satisfy a broad set of requirements for training, education, mission rehearsal, and doctrine development. The initial objectives for the JSIMS program addressed an extremely broad set of requirements. The emphasis was on establishing broad goals for what the Services desired in JSIMS and how they would work together to sustain the program. Subsequently, the JSIMS Mission Needs Statement (MNS) provided a more formal definition of the deficiencies of the current M&S supporting joint and Service training and established the need for JSIMS. The MNS described JSIMS in terms of desires for general capabilities. The ORD supports the MNS and sets forth requirements of the user. A Functional Requirements Document (FRD) was developed to clarify and expand the ORD. The Concept Of Operations (CONOPS) addresses how the users will employ the capabilities described in these documents.

The JSIMS MNS describes deficiencies in the current simulation systems used by combatant commanders for training their commands. The initial goal for the JSIMS program will be to provide a replacement for the current Aggregate Level Simulation Protocol (ALSP)-based Joint Training Confederation (JTC). The primary target audience for ALSP was the joint force commander (JFC), and JSIMS will incorporate all the functionality necessary to fulfill JFC training requirements. The JTC also provided capabilities to support Service and multi-component training requirements, albeit at significant costs in planning and preparation time, personnel, and other resources.

JSIMS is not merely a replacement for the ALSP JTC; it will contain capabilities currently omitted in the JTC and, therefore, be far more realistic and efficient in the JFC training environment. JSIMS capability at IOC may be constrained by current technology, but it will be designed to incorporate emerging technology and improve as later versions are fielded, exceeding the current capability and including support for Service and professional military education (PME) uses.

3.10.6.3.2 Simulation Environment

The JSIMS simulation environment, in contrast to the JTC, will provide an integrated representation of the battle space domains. In addition to integrating land, maritime, and air/space domains, JSIMS will encompass other linked capabilities, such as transportation, logistics, intelligence, C4, special operations, and information operations. The JSIMS core will include common and joint representations and simulation Services, a run-time hardware and software infrastructure and interfaces. JSIMS efficiency, composability, and tailorability will allow it to represent

tertiary domains when JSIMS is used for focused Service, functional, and mission rehearsal training and education. High Level Architecture (HLA) will enable JSIMS to exchange data with other systems such as weapons platform simulators.

3.10.6.4 Standardized Tactical Entry Point

Reachback communications are critical for support of the operational/tactical forces. Deployed Marines will take computers used in-garrison and will access NMCI via the Tactical Data Network. Fixed and mobile STEPs will provide the interface to reachback communications.

The Defense Information System Network (DISN) consists of three principal blocks, the sustaining base block, the long haul block, and the deployed block. The Defense Information Systems Agency (DISA) is responsible for managing long haul communications and the connections between the sustaining base and the deployed blocks. The DISN Deployed Branch of DISA is responsible for the integration of the long haul and deployed blocks of DISN.

The near-term strategy consists of implementing simple modifications to existing components of the network in order to increase network capabilities. The current bridge between the sustaining base and deployed blocks is the Standardized Tactical Entry Point (STEP), utilizing SHF (X-band) satellite links. The new national strategy envisions power projection by highly flexible, rapidly responsive, tailored force packages under Joint Task Force (JTF) or Combined Task Force (CTF) command. Major military and commercial satellite and fiber systems are in place or scheduled for implementation in the next five years. In addition, the military Services are rapidly fielding new tri-band terminals (X, C and Ku-band) for reachback to the sustaining bases. A subset of the STEP sites must be upgraded in order to provide cost-effective, seamless access to DISN long-haul services for tactical users of all frequency bands. These confluence and distribution centers will become DoD Teleports. The DoD Teleport provides a convenient center for new technology, such as Asynchronous Transfer Mode (ATM) services, to be available across the DISN blocks.

The locations of the fixed STEP sites are listed below.

- Landstuhl, Germany
- MacDill. Tampa
- Ft Detrick, Md
- Croughton, England
- Wahiawa, HI
- Northwest, Norfolk
- Ft Bragg, NC
- Riyadh
- Ft Buckner, Okinawa
- Lago Patria, Italy
- Ft Meade, Md
- Bahrain
- Camp Roberts, CA
- Ft Belvoir, VA
- Ft Gordon, GA
- Ft Monmouth, NJ
- Camp Zama, Japan
- Finegayan, Guam
- Corozal, Panama

3.11 MANPOWER AND PERSONNEL - UNITED STATES MARINE CORPS

Manpower and Personnel is one of the six Marine Corps operational/functional activity areas used in this DRM to describe how the Marine Corps performs its mission. The intent of this section is to provide a brief overview of the mission, people, and locations that relate to this function, leading to the real objective – a description of the IT infrastructure and services that must be in place to support it. The elements of the IT description will characterize how the work activities of this function place demands or stress on the IT infrastructure (NMCI) during a hypothetical set of potential environments in which the Marine Corps must be prepared to operate, as described in chapter 2. The graph in Figure 49 is provided as a way of introduction, showing the notional stress that Manpower and Personnel could be expected to place on NMCI during peacetime and during increase in operational tempo. This graph was developed based on functional expert's input as reflected in Table 50.
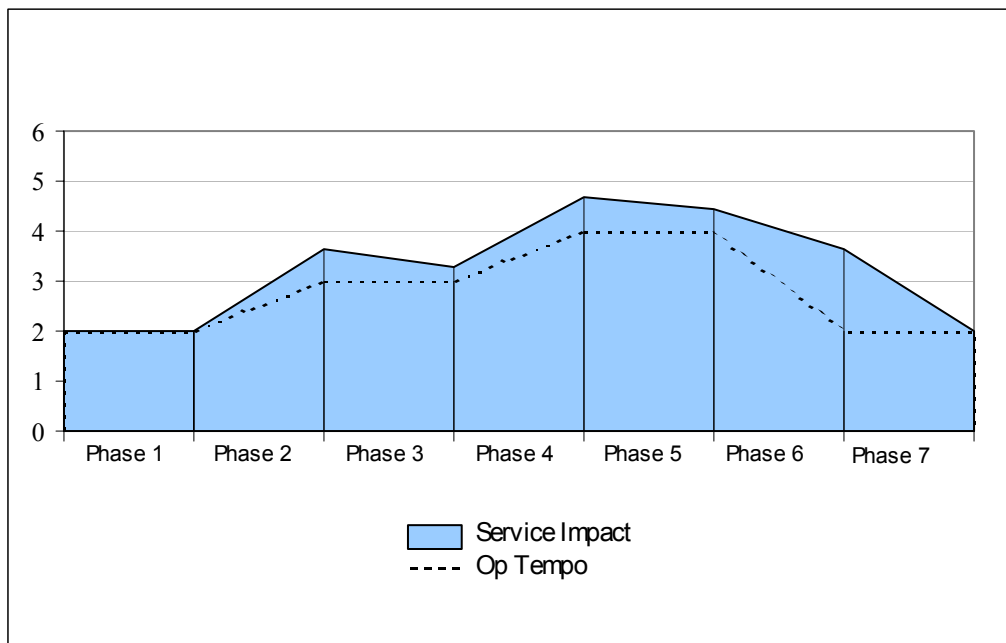
Figure 49 Manpower and Personnel Impact on NMCI Services

3.11.1 Functional Description

Personnel matters for the Marine Corps are worked at two distinct levels. The individual Marine's service record is administered at the Battalion level for the majority of units throughout the Corps. On a macro level personnel matters are handled by the Manpower and Reserve Affairs Department located in the National Capital Region in Quantico, Virginia. Manpower and Reserve Affairs (M&RA) focus is on all manning/personnel issues for active duty and much of the reserve force. The key functions for both entities at the macro level are:

Manpower and Reserve Affairs Department: employs over 800 marines and civilians in the execution of its mission. The specific tasks carried out by this Department can be broken down by Divisions and are annotated as follows:

Manpower Policy & Plans Division: formulates Marine Corps force manpower plans, including mobilization plans. Determines total manpower needs; preparing plans, policies, programs, and instructions on manpower matters to implement the Commandant's policies and decisions. Determines the allocation, distribution and use of all Marine Corps manpower, military and civilian. Prepares manpower budget estimates and justification. Maintains liaison with external agencies in manpower matters; and administers and coordinates the overall Marine Corps productivity improvement and total quality leadership efforts.

Personal and Family Readiness Division: The Personal and Family Readiness Division (MR) under the staff cognizance of the Deputy Chief of Staff for Manpower and Reserve Affairs is responsible for providing Service

policy and resources to support commanders in executing quality Personal and Family programs which enhance the operational readiness, warfighting capabilities, and life quality of Marines, their families, retirees and civilians. The Division also performs some direct support functions necessary for program execution.

Personnel Management Division: Responsible for management of active duty personnel for the Marine Corps. Responsibilities include the staffing of the Corps to end strength numbers for Officers and Enlisted, the Handling of all separations and retirement matters. PMD also directs and controls the functions necessary to create, maintain, and archive Official Military Personnel Files (OMPFs) and directs and controls the functions and operation of the Performance Evaluation System (PES).   Additionally, PMD is responsible for all promotion matters from the convening of boards to the appeal process.

Manpower Management Information Division: Serves as the G-6 for M&RA.   Responsible for administration of the Marine Corps Total Force System (MCTFS). Serves as liaison with outside agencies for DoN or DoD on Information Systems Issues. Additionally, manages and administers all manpower specific programs and processes.

Reserve Affairs Division: Reserve Affairs Manpower is responsible for a variety of programs that support the administration of the USMCR. The Active Reserve, Active Duty Special Work and Reserve Career Management are some examples of the programs. RA serves as a liaison with the Cruiser (CG) MARFORRES, and is responsible for the coordination and execution of reserve mobilization.

Battalion Level Administration: The day-to-day upkeep of the individual marine's service record book. This involves all pay and training issues with extensive use of unit diary entries via the MCTFS.

3.11.2 Operational Activities at Phases 1-7

During Peacetime (Steady State) operations – Manpower and Personnel activities remain constant at this state during peacetime activities. Support routines are constant and repeating.

The baseline, peacetime (Phase 1) Manpower and Personnel IT steady state Service Level Indicator (SLI) is 1-2.

USMC Battalion Manpower and Personnel administration continues to maintain the service record books. This entire process is reliant on connectivity to the MCTFS. Unit diaries are the vehicles used to update an individual's record. Connectivity to MCTFS must be reliable for over 100 locations that support these various administration centers throughout the world.

During a surge to one MTW - Heightened activity occurs in Manpower Plans and Reserve Affairs as the various manpower models receive tremendous focus. The Mobilization Models become critical. The focus is on the various I&I staffs located at over 50 locations across CONUS as they prepare for the influx of activated reserve units and individual Ready reservists. This adds stress to these units' LANs and support staff workloads.

During a surge to one MTW, Manpower and Personnel activity within the Department surges, placing increased stress on the following IT Systems:

- WAN – load dramatically increases as communications increase in frequency and duration.

- 3270 & MCMODS – the load on these systems increases almost two fold. Orders, models, and analysis of data skyrocket. The stress on 3270 administration increases as new users requirements tax the system.

- E-mail – volume and frequency of use of explode, adding further stress to IT infrastructure. The addition of new users taxes the administration as well.

- Switched Voice – again, a dramatic increase in volume and the duration of calls

- Video Conferencing – the demand for this medium increases from minimal to an indeterminate amount. This form of communication will increase with MarFor's and at the senior officer level.

- Remote Access, Cell Phones, and pagers – demand for these mediums increases as the department strives to attain maximum productivity at all times from various locals.

- SIPRNET – this capability needs to be able to increase at the same proportion as this traffic does.

- The crisis response center is activated and staffed 24 hours a day. All workstations within this center will require SIPRNET connectivity.

- Network Management and Help Desk Support – both entities begin 24-hour operations. Staff and Schedules must be augmented accordingly.

With heightened pre-conflict operations coincident with a surge to two MTWs based on a second geopolitical event - I&I staffs remain taxed and the Reserve support units located at Camp Pendleton, California, and Camp Lejeune, North Carolina, are in full OP tempo.

With the rise to sustained operations at two MTWs – Manpower and Personnel support IT systems experience a second surge. Key department systems as 3270 and MCMODS continue to surge, more users taxing both infrastructure and administration. Switched Voice and E-mail increase again in volume and frequency. Stress on the WAN and SIPRNET are seen by the dramatic increase in use. Network management and Help Desk Support must be able to surge in relation to the even heightened activity. Training demands increase as more users are added to the department. Remote access, cell phones and pagers increase in the number required and volume of use. Security of systems and data remain paramount.

For sustained operational transition to a completion of hostilities - Manpower and Personnel support IT systems loading is as for the two MTW condition.

At the completion of hostilities - Manpower and Personnel experience a slight leveling off from the tremendous surge from the previous two phases. The emphasis is on network management and security issues. Management must be prepared to coordinate possible control issues to ensure the IT support structure is able to handle the prioritized use of SIPRNET connectivity and operational support. Network Security and SIPRNET loading/dependence are the two most critical challenges during this period. IT systems support of the two MTW drawdown and demobilization remain high. A gradual decline in the volume and intensity of use of 3270, MCMODS, SIPRNET, voice, e-mail, network management and Help Desk support are experienced during this phase.

At the return to steady-state operations - Manpower and Personnel activities return to a constant support level at this state as during peacetime activities. Support routines are constant and repeating.

3.11.3 Specific IT Support

At Peacetime steady state conditions Manpower and Personnel, M&RA, is reliant on the following IT elements:

- 3270 – the orders, separations, retirements, promotions, manpower models, mobilization models and analysis functions all use this IT system as their backbone for production.

- Marine Corps Manpower Operational Data Store (MCMODS) – the backbone on which the Manpower Management Assignment Support System resides. It is used to create all active duty orders. MCMODS is also the platform on which staffing goal models are run. Manpower analysis is performed against this data.

- E-mail – a key means of communication for the department with the rest of the Corps. Especially vital in communicating with divergent time zones. The critical operability of this IT system is to maintain 99 percent operational availability.

- Switched Voice – is critical to the Manpower and Personnel department. Along with e-mail, this is the conduit upon which vital communications occur. This medium is heavily relied upon by officer and enlisted assignments and the MR Division.

- Video Tele-Conferencing – growing within the department. Employed most frequently by the MR Division to coordinate distance learning and education.

- Remote Network Access – relied on heavily by the PMD Division during monitor trips and in support of the orders process. This type of connectivity is critical for General Officers, Division and Branch Heads.

- Network Management – vital to the department's success. Ninety-nine percent uptime for the manpower network is a requirement. Engineers must be prepared to respond to calls on a 24 hr a day basis. Extensive coordination with the Marine Corps NOC is required.

- Help Desk Support – must be manned from 0600 – 1800. Provides the first line of communication and response to the end user on issues relating from network connectivity to desktop support. Department averages around 20 trouble calls per day.

- SIPRNET Connectivity – minimal during normal operations. Handled primarily by MPP-60 through the use of two secure terminals.

The following figures graphically depict the impact that USMC Manpower and Personnel functions will have on the six, key NMCI service groupings (Security, Enterprise Network Management, Help Desk, Wide Area Network Connectivity, Base Area and LAN Services, and Video Teleconferencing) during the notional DRM scenario. The supporting data used to develop these graphs is presented in Table 50. The most notable stresses resulting from USMC Manpower and Personnel activities occur for WAN, BAN/LAN, Help Desk, and VTC.
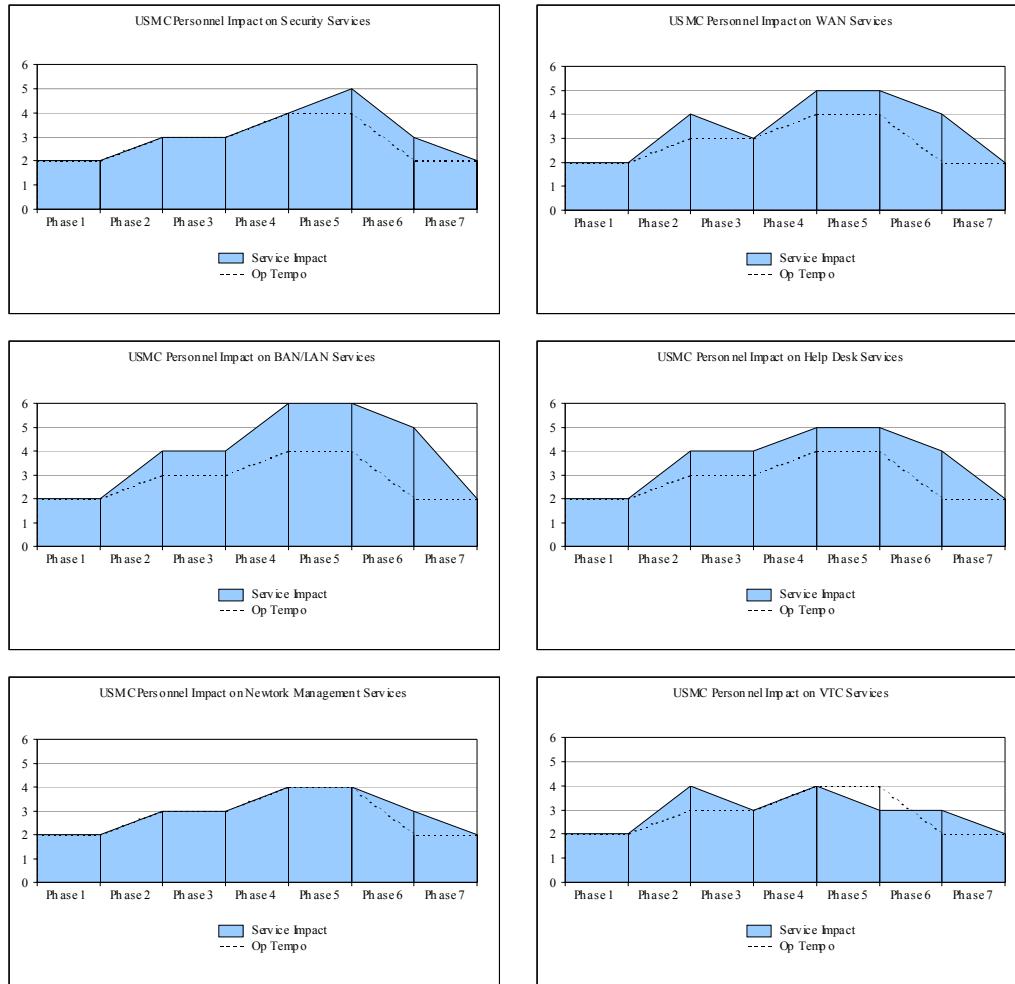
Figure 50 Individual Service Impacts for Manpower and Personnel

The operational/functional IT managers estimated stress data for the list of 13 NMCI services introduced in chapter 2.The data includes the six graphically depicted above plus seven others. The complete set of data is presented in the NMCI Services Impact Worksheet below.

USMC Personnel

Network Services	Phase 1 Peacetime Ops	Phase 2 Deploy MTW1	Phase 3 Employ MTW1	Phase 4 Deploy MTW2	Phase 5 Employ MTW1/2	Phase 6 Redeployment	Phase 7 Peacetime Ops
Security Services: firewalls, intrusion detection, availability, encryption.	Steady State	1	0	1	1	-2	-1
Wide Area Network Connectivity: Access to DISN (SIPRNET & NIPRNET); commercial WAN; Internet. Includes capacity, functionality, and assurance.	Steady State	2	-1	2	0	-1	-2
Base Area and Local Area Network Services: Voice, video and data; End-user to WAN POP; Assumes classified and unclassified; Includes availability, capacity, functionality, and assurance.	Steady State	2	0	2	0	-1	-3
Desktop Hardware and Software: Provisioning / relocating of end user desktop suites.	Steady State	1	0	1	-1	-1	0
Help Desk and Technical Support: Touch labor & support to users.	Steady State	2	0	1	0	-1	-2
Enterprise Network Management: Includes perf mngt, directory, DNS, connectivity or accounts (adds/moves/ deletes), VPN spt, sys integration, config mngt, capacity planning; class and unclass.	Steady State	1	0	1	0	-1	-1
Organizational Messaging: AUTODIN & DMS	Steady State	2	-1	2	-1	1	-3
Email: Capacity, availability, classified and unclassified.	Steady State	2	0	2	-1	0	-3
Web Services: Web enabled applications hosting; search engines; news group services; web site hosting.	Steady State	1	-1	1	0	-1	0
Remote Telephone Access	Steady State	2	-1	2	-1	0	-2
Video-teleconferencing: Including capacity, availability, management and set up of sessions.	Steady State	2	-1	1	-1	0	-1
Telephony: Switched voice, voice over data, cellular service, pagers.	Steady State	2	0	2	0	-1	-3
Training: System administrator, end user training.	Steady State	1	0	1	-1	-1	0
Weighted Average of Impact on NMCI Services. First cell is Steady State SLI.	2.00	3.65	3.30	4.70	4.45	3.65	2.00

Table 50 USMC Personnel

3.11.4 Supported Systems.

- Marine Corps Total Force System
- Marine Corps Operational Data Store
- Automated Orders Writing Process
- Manpower Mobilization Assignment System
- Manning Level Process
- Table of Manpower Requirements/Troop List

3.11.5 Geographic Information.

The National Capital Region is the hub of communications. The WAN is widely used to communicate with the rest of the Corps. There is a substantial transfer of data between St. Louis and Kansas City. Two main areas of communication are the MARFORRES in New Orleans and the MCRSC in K.C. Special attention must be paid to the Battalion level administration centers throughout the Marine Corps. These Centers are Camp Pendleton, California; Camp Lejeune, North Carolina; Twenty-Nine Palms California; Albany, Georgia; Barstow, California; and Okinawa, Japan.

3.12 LOGISTICS - UNITED STATES MARINE CORPS

Logistics is one of the six Marine Corps operational/functional activity areas used in this DRM to describe how the Marine Corps performs its mission. The intent of this section is to provide a brief overview of the mission, people, and locations that relate to this function, leading to the real objective – a description of the IT infrastructure and services that must be in place to support it. The elements of the IT description will characterize how the work activities of this function place demands or stress on the IT infrastructure (NMCI) during a hypothetical set of potential environments in which the Marine Corps must be prepared to operate, as described in chapter 2. The graph in Figure 51 is provided as a way of introduction, showing the notional stress that Logistics could be expected to place on NMCI during peace time and during increase in operational tempo. This graph was developed based on functional expert's input as reflected in Figure 51.
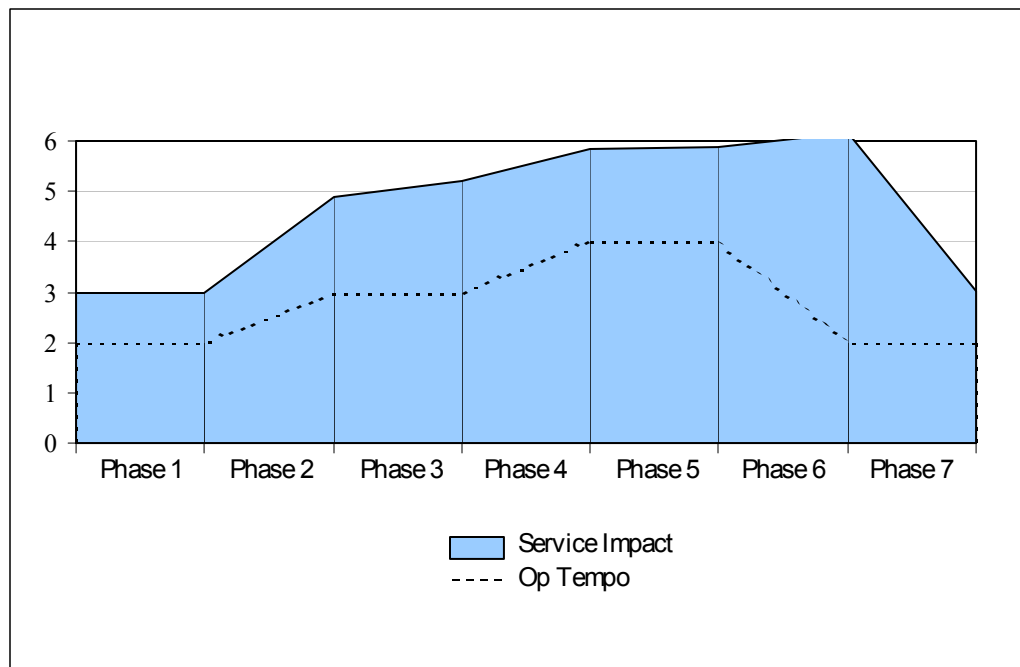
Figure 51 Logistics Impact on NMCI Services

3.12.1 Functional Description

USMC Logistics provides the support functions of supply, maintenance and transportation. Logistics provides the physical means for the organized forces to exercise power. It enables people and their weapons to execute their operations by providing:

Availability - functional operating equipment, and the required levels of supplies and services
Maintainability – support for weapons systems effectively and efficiently throughout their life cycle, includes spare parts support, technical documentation, maintenance and repair, and cost information systems and management tools
Mobility –capability to move people, weapons systems, and their supporting supplies and services, any place in the world, quickly and efficiently.
Sustainability - capability to maintain levels of support over extended periods of time, to allow people and weapons systems to continue to operate at the highest levels of readiness
Data Accessibility - secure and timely access to a wide range of cross-functional planning, asset, technical, and management data. This includes weapons system data to define the configuration of support packages, technical drawings to facilitate rapid support, maintenance and wartime planning factors to determine the range and depth of support requirements, maintenance factors to evaluate repair capabilities, and asset information to determine materiel availability.

3.12.2 Operational Activities at Phases 1-7

During Peacetime (Steady State) operations - All IT services begin to ramp up for USMC logistical functionaries in Phase 1. This ramp up assumes advanced warning that the crisis that will lead to the first MTW has been received. Usage increases on the IT infrastructure for logistics operations with initial notification of deployment for MTW support and is maintained throughout all phases of the operation. At Phase 1 (with advance warning - Initial Notification) logistics agencies throughout the Corps will begin a significant surge on IT architecture as planners respond to developing and pre-planned deployment strategies. Specifically, as soon as a planning order is published security safeguards must increase in anticipation of probes on the system by parties attempting to ascertain unit movements by monitoring increased logistical information flow. Network management services will increase in response to increased usage of WAN, E-mail, LAN and Switched Voice (to be superseded by Voice Over Data (VOD)). The local help desk services are critical to this phase as commanders and planners are requesting/producing data in response to CINC queries. This service MUST be a 24 hr per day/7 day per week function that is responsive to the user worldwide in any time zone. As planners/units search for data/respond to queries, the usage of Web pages/Newsgroups will increase. Data warehousing will be utilized extensively as units pull data to flesh out plans and develop loads for ships. Connectivity requirements via cell phone, VTC and SIPERNET increase dramatically as the logistical plan is adjusted, implemented and tracked between CINCS, HQMC, MARFORs and deploying units throughout these phases. EDI/EFT use will increase beginning in phase 2 as contracts are let for commercial carriers during deployment.

The baseline Phase 1 Logistics IT usage steady state Service Level Indicator (SLI) is 3.

During a surge to one MTW - the IT services most heavily engaged for Logistics support are Security services, WAN, Pier Services, Organizational Messages, Training, Directory Services, E-mail, RTA, Domain Name Services, LAN, and Switched Voice/VOD. Requirements for increased security precautions will continue throughout this phase due to anticipated actions from parties attempting to discern troop movement through force deployment planning and execution. Requirements will ramp up significantly for IT services at throughput nodes in support of units reporting through automated systems. Increased quantity of organizational message traffic will also burden the system as ships and deploying units file non-automated reports through AUTODIN and Naval Message traffic. Remote telephone and data access will increase as deployment personnel link into garrison accounts to access data files and documents. As reserve forces flow into vacated garrison locations, the requirement for system training and the development of revised Domain/Directory services arise.

With heightened pre-conflict operations coincident with a surge to two MTWs based on a second geopolitical event - Logistics Training and Directory Services ramp down. Usage of LAN, Switched Voice/VOD, Portable SATCOM and EDI/EFT services increase. Training and directory services will decrease as reserve forces are now in place. The requirement to support and sustain the force will expand the use of LAN, Switched Voice/VOD and portable SATCOM. Deployed forces "reach back" to vendors/providers in CONUS using IT architecture to ensure continued re-supply of stores. Continued usage by logistics planners are in evidence as initial notification of MTW 2 starts the pre-deployment preparations and tax the system for data.

With the rise to sustained operations at two MTWs - IT dependence for Logistics involves WAN, Pier Services, Organizational Messages, Training, Directory Systems, E-mail, RTA, Domain Services, LAN, Collaborative Planning, Local Help Desk, Web/newsgroup, Data warehousing, After hours help desk, Cell Phones/pagers, VTC and SIPERNET. As MTW 2 deployment begins, the increased IT services usage is apparent. Deployed units continue to report and are requesting re-supply through the system while new units are accessing the system to report their deployment status. Organizational Messages increase as non-automated reports are submitted. Unit movements and strength reports utilize SIPERNET and WAN as information is processed using E-mail, Remote phone access and cell phone/pagers.

For sustained operational transition to a completion of hostilities - WAN, Training, Directory Services and Domain Services all ramp down following the closure of the force to MTW 2. Portable SATCOM and EDI/EFT will ramp up. Following replacement of forward deploying Marines with reserves and these troops are trained up with new directories and domains established, a significant decrease in contractor training and domain management following phase 5 will be realized. Requirements for deployed units to maintain connectivity while in austere environments will increase utilization of EDI/EFT for vendor/contracting support of the forces.

At the completion of hostilities - WAN, Tech Support, Network Management, E-mail and LAN usage ramp up. As forces begin preparations for redeployment the requirements for increased transfer of data to HHQ in CONUS will ramp up. Services to maintain the IT will be required as Logistics support services and commands organize and

execute the redeployment phase.

At the return to steady-state operations -All Logistics support IT services ramp down to previous peacetime operational levels. The exception could be data warehousing which, following one or two MTWs, could increase significantly as the services and the CINCs capture data produced during all phases of the operation.

3.12.3 Specific IT Support

The USMC Logistics community utilizes Security Services, WAN, Tech support, Network Management, E-mail, LAN, Switched Voice/VOD, Collaboration, Local Help Desk, Web/Newsgroup, Data Warehousing, Cell phone/pagers, VTC, SIPERNET and EDI/EFT.

The following figures graphically depict the impact that USMC Logistics functions will have on the six, key NMCI service groupings (Security, Enterprise Network Management, Help Desk, Wide Area Network Connectivity, Base Area and LAN Services, and Video Teleconferencing) during the notional DRM scenario. The supporting data used to develop these graphs are presented in Table 51**52**. The most notable stresses resulting from USMC Logistics activities occur for WAN, BAN/LAN, Help Desk, and VTC.
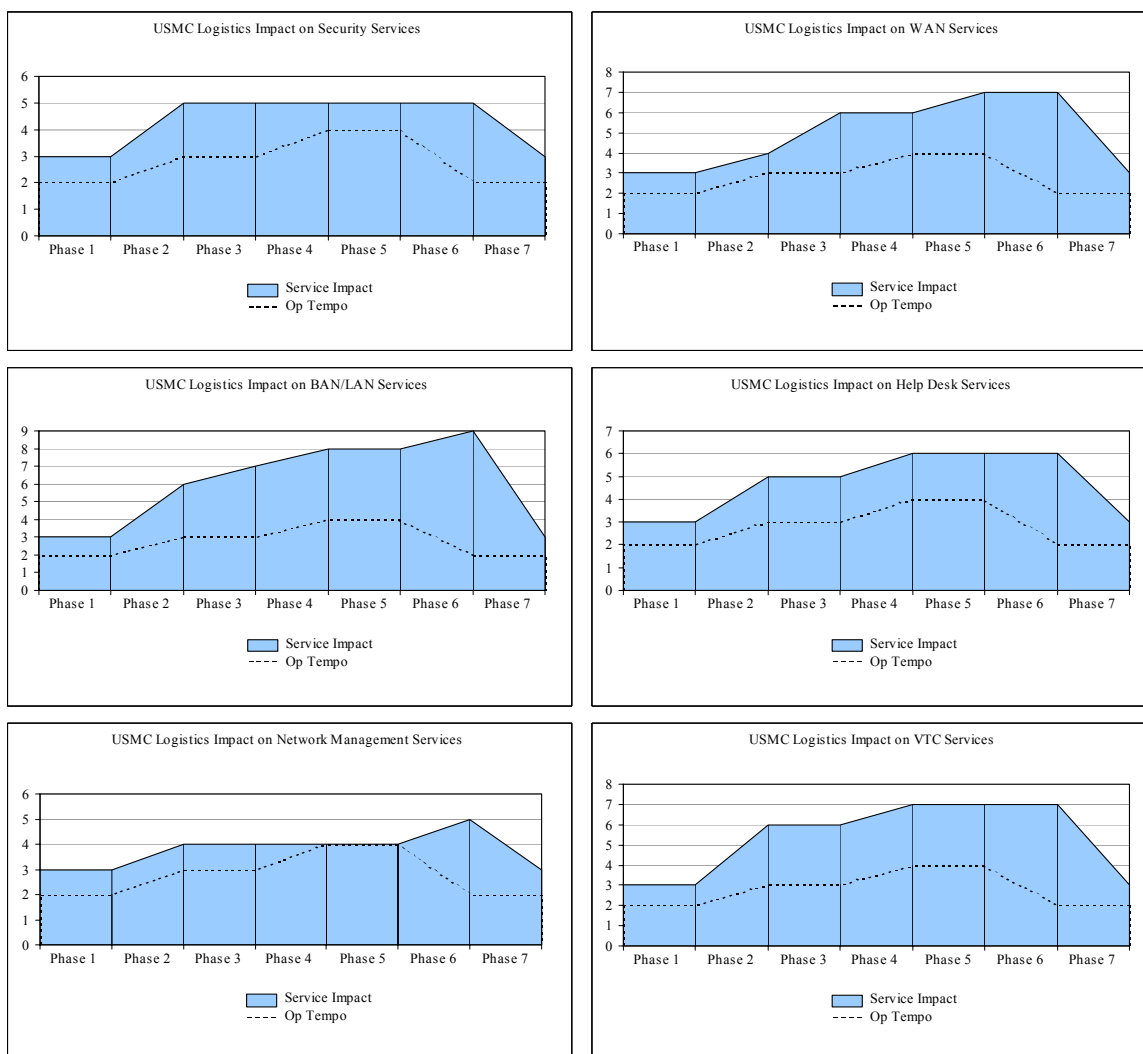
Figure 52 Individual Service Impacts for Logistics

The operational/functional IT managers estimated stress data for the list of 13 NMCI services introduced in chapter 2.The data includes the six graphically depicted above plus seven others. The complete set of data is presented in the

NMCI Services Impact Worksheet below.

USMC Logistics

Network Services	Phase 1 Peacetime Ops	Phase 2 Deploy MTW1	Phase 3 Employ MTW1	Phase 4 Deploy MTW2	Phase 5 Employ MTW1/2	Phase 6 Redeployment	Phase 7 Peacetime Ops
Security Services: firewalls, intrusion detection, availability, encryption.	Steady State	2	0	0	0	0	-2
Wide Area Network Connectivity: Access to DISN (SIPRNET & NIPRNET); commercial WAN; Internet. Includes capacity, functionality, and assurance.	Steady State	1	2	0	1	0	-4
Base Area and Local Area Network Services: Voice, video and data; End-user to WAN POP; Assumes classified and unclassified; Includes availability, capacity, functionality, and assurance.	Steady State	3	1	1	0	1	-6
Desktop Hardware and Software: Provisioning / relocating of end user desktop suites.	Steady State	0	0	0	0	0	0
Help Desk and Technical Support: Touch labor & support to users.	Steady State	2	0	1	0	0	-3
Enterprise Network Management: Includes perf mngt, directory, DNS, connectivity or accounts (adds/moves/ deletes), VPN spt, sys integration, config mngt, capacity planning; class and unclass.	Steady State	1	0	0	0	1	-2
Organizational Messaging: AUTODIN & DMS	Steady State	1	0	1	0	0	-2
Email: Capacity, availability, classified and unclassified.	Steady State	3	1	1	0	1	-6
Web Services: Web enabled applications hosting; search engines; news group services; web site hosting.	Steady State	3	0	1	0	0	-4
Remote Telephone Access	Steady State	1	0	1	0	0	-2
Video-teleconferencing: Including capacity, availability, management and set up of sessions.	Steady State	3	0	1	0	0	-4
Telephony: Switched voice, voice over data, cellular service, pagers.	Steady State	3	0	1	0	0	-4
Training: System administrator, end user training.	Steady State	1	-1	1	-1	0	0
Weighted Average of Impact on NMCI Services. First cell is Steady State SLI.	3	4.9	5.2	5.85	5.9	6.15	3

Table 5152 **USMC Logistics**

Logistics function IT Service requirement priorities and associated measures of effectiveness are as follows:

Priority	IT Service	Performance Measure
1	WAN	Capacity
2	Data Warehouse	Capacity
3	Security Services	Assurance
4	E-mail	Responsiveness
5	Switched Voice/VOD	Assurance
6	Collaboration	Responsiveness
7	SIPRNET	Assurance
8	EDI/EFT	Assurance
9	Web/Newsgroup	Availability
10	LAN	Responsiveness
11	Network Management	Responsiveness
12	Cell Phone/Pagers	Responsiveness
13	Tech Support/Local Helpdesk	Responsiveness
14	VTC	Capacity

Table 53 Logistics Function IT Service Priorities and Performance Measures

3.12.4 Supported Systems.

Approximately 29 mission critical IT systems are impacted for Logistics support. The top five systems impacted are Marine Air Ground Task Force (MAGTF) II, MAGTF Deployment Support System (MDSS) II, Materiel Unified Movement Management System (MUMMS)-SS05 Automated Procurement Subsystem, Asset Tracking Logistics and Supply System (ATLASS), and the Supported Activities Supply System (SASSY).

3.12.5 Geographic Information.

In Phases 1-2, during steady-state, normal peacetime operations, then transitioning to a surge to one MTW based on a geopolitical event, the geographic locations that engage to provide Logistics support are HQMC, the CINCS, MARFORs and Bases/Stations. Then in Phase 2–3, with heightened pre-conflict conditions in the one MTW scenario, these locations are heavily engaged and will increase with smaller hubs at SPODs as required. In Phase 3-4, with the one MTW conflict scenario compounded by geopolitical events leading to a surge to a second MTW, geographic locations now include all USMC units as planners query the system for information relating to MTW 2. In Phases 4-5 with the surge to two MTWs followed by sustained operations based on a second geopolitical event geographic locations are now worldwide as forces flow from both coasts of CONUS to east and west MTW. In Phase 5-6, with sustained operations at two MTWs transitioning to a completion of hostilities geographic locations may increase as the forces move into more favorable transportation nodes. This factor is fluid as it is predicated on the flow of the conflict. As events move into Phase 6-7, with the completion of hostilities leading back to steady-state conditions geographic locations are expected to remain the same or possibly decrease as units consolidate following offensive operations.

3.13 TRAINING AND EDUCATION - UNITED STATES MARINE CORPS

Training and Education is one of the six Marine Corps operational/functional activity areas used in this DRM to describe how the Marine Corps performs its mission. The intent of this section is to provide a brief overview of the mission, people, and locations that relate to this function, leading to the real objective – a description of the IT infrastructure and services that must be in place to support it. The elements of the IT description will characterize how the work activities of this function place demands or stress on the IT infrastructure (NMCI) during a hypothetical set of potential environments in which the Marine Corps must be prepared to operate, as described in chapter 2. The graph in Figure 53 is provided as a way of introduction, showing the notional stress that Training and Education could be expected to place on NMCI during peacetime and during an increase in the operational tempo. This graph was developed based on functional expert's input as reflected in Table 55.
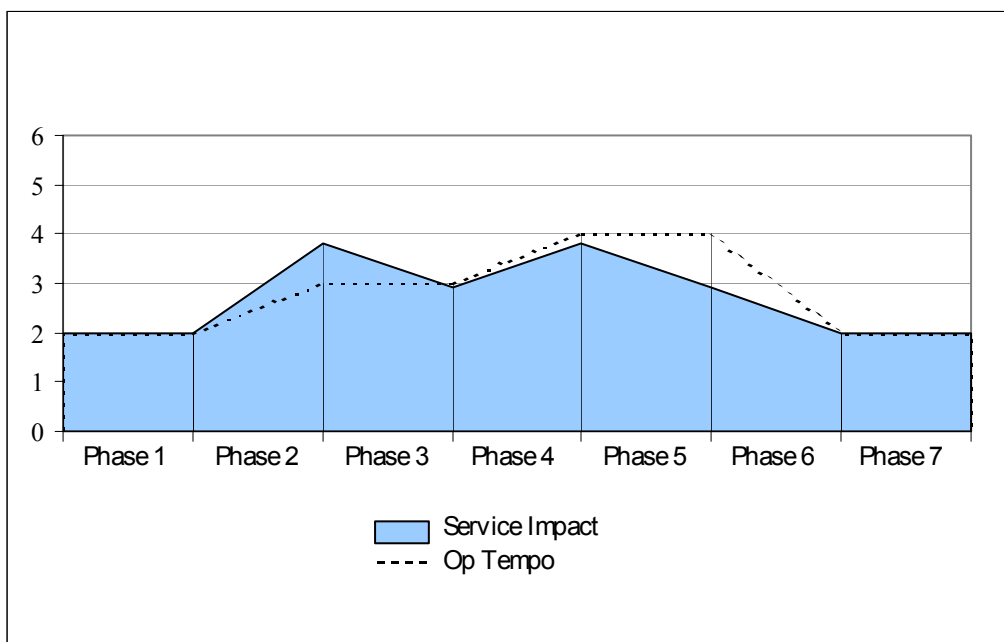
Figure 53 Training and Education Impact on NMCI Services

3.13.1 Functional Description

The Marine Corps Training and Education infrastructure is distributed across numerous organizations in both the supporting establishment and the operating forces. Training and Education is divided into five major instructional areas, each with its own organizations, facilities and assets keyed to the type of training or education provided. The major instructional areas are:

Individual Training: Initial-entry training conducted at the Marine Corps Recruit Depots (San Diego, CA and Parris Island, SC) and Schools of Infantry (Camp Pendleton, CA and Camp Lejeune, NC); Specialized skills training conducted at Marine Corps and other Service formal schools (13 locations across the country) and through the Marine Corps Institute (MCI) – located in the Washington Navy Yard; Managed-on-the-job training (MOJT) programs conducted in the operating forces and supporting establishment.

Collective Training: Unit training exercises conducted by the operating forces; Staff training conducted by operational staffs, the Expeditionary Warfare Training Groups (EWTGs) located at Little Creek, VA and Coronado, CA), and through the MAGTF Staff Training Program (MSTP) – located in Quantico, VA).

Sustainment Training: Refresher training (short courses) provided by selected Marine Corps schools and distance learning provided by the formal schools and MCI.

Professional Military Education: In-residence and distance learning programs of instruction sponsored by the Marine Corps University (Quantico, VA) and other Service schools, colleges, and universities.

Mobilization Training: Training in support of mobilized RC forces conducted by selected formal schools, cadre staffs and operating force units.

The two major functions performed in Training and Education are Training Delivery and Training Management. The Training Delivery function comprises the analysis, design, development, implementation and evaluation of training and educational content and is performed by formal schools, training detachments and MCI. The Training Management function comprises the planning, programming, budgeting, scheduling and evaluation of all Training and Education programs. Training Management is performed by T&E Division, Marine Corps Combat Development Command (MCCDC) in Quantico, Virginia and supported by the input from the operating forces, formal schools, the training detachments, the Marine Forces Reserve staff in New Orleans, Louisiana, and Headquarters Marine Corps, Manpower and Reserve Affairs Division.

The Marine Corps training establishment consists of a Headquarters element located in Quantico, VA, the MCI in Washington DC, approximately 35 formal schools located at major Marine Corps bases, and 40 Marine Detachments located across the country at other Service locations. The personnel structure consists of about 13,000 military and civilian trainers, educators and curriculum developers. Of that number, approximately 25% require IT services to perform their particular training function. Additionally, about 170,000 schools seats are trained and managed per year. Of that number, about 4200 students require IT services as part of their training curriculum. The trainers and students are distributed across the country in various locations as shown in Table 54.

Region / Location	Civilian and Military Personnel
Washington, DC	170
Mid-Atlantic- Quantico VA, Ft. Lee VA, Aberdeen MD	831
South Central-Ft. Sill OK, Ft. Bliss TX, Corpus Christi TX , Goodfellow TX	355
North Central- Ft. Leonard Wood	449
Southeast-CLNC, PISC, Norfolk, Ft. Knox KY, Huntsville AL, Meridian MS, Athens GA	2811
Southwest- CPCA, San Diego, Miramar, Yuma AZ	2449
Hawaii	65
Northwest-**Whidbey**	40
Pensacola	281
Total	7451

Table 54 Training and Education IT User Personnel Distribution

3.13.2 Operational Activities at Phases 1-7

During peacetime (Steady State) operations, the Training and Education function supports the operational readiness of the Marine Corps Total Force. Training activities at this time are characterized by steady, highly distributed, time-critical, outcome-driven, readiness-related, cross-functional responses relevant to all types of military operations. Training and Education is dependent on IT to accomplish normal workload (Service-level indicator [SLI] 2).

During a surge to one MTW, planning timeframes are compressed and the training response must be rapid and flexible. The Training and Education infrastructure must quickly "ramp up" to meet critical mission area training requirements as units and personnel are mobilized and staffs are oriented. Training activities dramatically increase in operational tempo and are characterized by robust, highly distributed, time-critical, outcome-driven, readiness-related responses relevant to all types of military operations. Training and Education becomes highly dependent on IT to accomplish the increased workload. Requirements for Network services (LAN, MAN and WAN), organizational and electronic messaging, directory services, web services, data access, telephony, video conferencing, and security dramatically increase during this phase.

During a surge to one MTW, approximately five percent of the instructor staffs would deploy with mobile training teams (MTT). One third of the vacated positions would be back-filled by reservists. The deploying MTTs would require a reach back voice communications and data capability to their parent training organizations.

With heightened pre-conflict operations coincident with a surge to two MTWs based on a second geopolitical event, Training and Education functions will decrease as active and reserve forces are now in place and beginning to conduct operations. However, a reach-back capability to CONUS-based formal schools and training centers using the IT infrastructure will be required. Stress of the NMCI and use of all major IT services will gradually decrease during this period.

With the rise to sustained operations at two MTWs, Planning time frames are again compressed and the training response must be rapid, as additional forces are required to meet MTW 2 requirements. The training infrastructure will stress NMCI to accomplish the increased training and education workload. Requirements for network services (LAN, MAN and WAN), organizational and electronic messaging, directory services, web services, data access, telephony, video conferencing, and security increases to previous Phase 2 levels from the major training locations and mobilization sites. Further, during a surge to a second MTW, an additional five percent of the instructor staffs would deploy as MTTs. One third of the vacated positions would be back-filled by reservists. The deploying MTTs would require a reach back voice communications and data capability to their parent training organizations.

For sustained operational transition to a completion of hostilities, stress on the NMCI and use of all major IT services will gradually decrease during this period as trained forces arrive in-theater and are employed. The "reach-back" capability to schools and training centers established in the pre-conflict phase (Phase 3) will be maintained.

At the completion of hostilities and the return to steady-state operations, stress on the NMCI will gradually decrease to original steady state levels.

3.13.3 Specific IT Support

The USMC Training and Education establishment will require a diverse and robust set of IT services to deliver and manage training and education across the total force during normal peacetime operations. Network management must include use of LAN, MAN and WAN, switched voice, dedicated and dial-up video conferencing services. Applications include organizational and electronic messaging, directory services, web services, file transfer, 3270 terminal emulation, multimedia support, distributed simulation, and distributed data access. This service must be available on a 24 hours per day by 7 days per week (24X7) basis and be responsive to users worldwide in any time zone. Adequate security safeguards must be established to prevent data loss, enhance data recovery, prevent intrusion, and provide access for moderate numbers of classified users. An 8X5 local help desk operation with some surge/after-hours operations capability is critical during steady state operations as commanders*,* staffs and trainers exchange training and education readiness information.

The following figures graphically depict the impact that USMC Training and Education function will have on the six, key NMCI service groupings (Security, Enterprise Network Management, Help Desk, Wide Area Network Connectivity, Base Area and LAN Services, and Video Teleconferencing) during the notional DRM scenario. The supporting data is provided as the final page of this functional write up. Of note, profiles for each of these six service groupings for the DRM scenario are identical. This is not true of all other service groupings for USMC Training and Education functional activities.
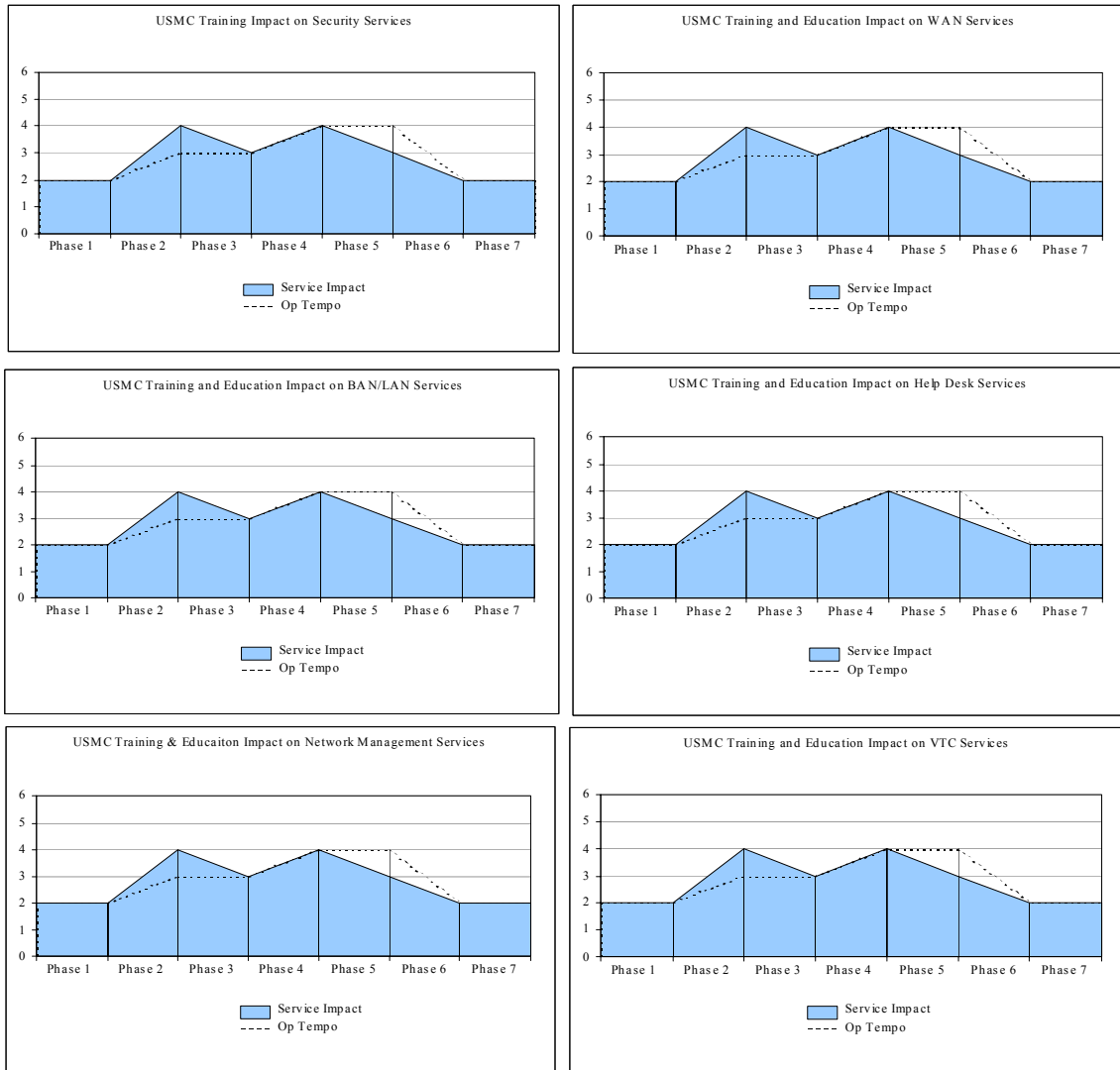
Figure 54 Individual Service Impacts for Training and Education

The operational/functional IT managers estimated stress data for the list of 13 NMCI services introduced in chapter 2.The data includes the six graphically depicted above plus seven others. The complete set of data is presented in the NMCI Services Impact Worksheet below.

USMC Training

Network Services	Phase 1 Peacetime Ops	Phase 2 Deploy MTW1	Phase 3 Employ MTW1	Phase 4 Deploy MTW2	Phase 5 Employ MTW1/2	Phase 6 Redeployment	Phase 7 Peacetime Ops
Security Services: firewalls, intrusion detection, availability, encryption.	Steady State	2	-1	1	-1	-1	0
Wide Area Network Connectivity: Access to DISN (SIPRNET & NIPRNET); commercial WAN; Internet. Includes capacity, functionality, and assurance.	Steady State	2	-1	1	-1	-1	0
Base Area and Local Area Network Services: Voice, video and data; End-user to WAN POP; Assumes classified and unclassified; Includes availability, capacity, functionality, and assurance.	Steady State	2	-1	1	-1	-1	0
Desktop Hardware and Software: Provisioning / relocating of end user desktop suites.	Steady State	0	0	0	0	0	0
Help Desk and Technical Support: Touch labor & support to users.	Steady State	2	-1	1	-1	-1	0
Enterprise Network Management: Includes perf mngt, directory, DNS, connectivity or accounts (adds/moves/ deletes), VPN spt, sys integration, config mngt, capacity planning; class and unclass.	Steady State	2	-1	1	-1	-1	0
Organizational Messaging: AUTODIN & DMS	Steady State	2	-1	1	-1	-1	0
Email: Capacity, availability, classified and unclassified.	Steady State	2	-1	1	-1	-1	0
Web Services: Web enabled applications hosting; search engines; news group services; web site hosting.	Steady State	2	-1	1	-1	-1	0
Remote Telephone Access	Steady State	0	0	0	0	0	0
Video-teleconferencing: Including capacity, availability, management and set up of sessions.	Steady State	2	-1	1	-1	-1	0
Telephony: Switched voice, voice over data, cellular service, pagers.	Steady State	2	-1	1	-1	-1	0
Training: System administrator, end user training.	Steady State	2	-1	1	-1	-1	0
Weighted Average of Impact on NMCI Services. First cell is Steady State SLI.	2.00	3.80	2.90	3.80	2.90	2.00	2.00

Table 55 USMC Training

Training and Education function IT Service requirement priorities and associated performance measures are listed in Table 56.

Priority	IT Service	Performance Measures
1	Telephony	Assurance & Capacity
2	Base Area and LAN Services	Assurance, Capacity & Responsiveness
3	Wide Area Network Connectivity	Assurance, Capacity & Responsiveness
4	Email (capacity and availability)	Assurance & Capacity
5	Organizational Messaging (AUTODIN, DMS)	Assurance
6	Security Services	Assurance
7	Web Services	Availability
8	Desktop Hardware and Software	Responsiveness
9	Video Teleconferencing	Assurance & Capacity
10	Training	Responsiveness

Table 56 Training IT Service Performance Measures and Priorities

3.13.4 Supported Systems

There are four major Training and Education information systems that users must electronically access in order to conduct Training Management activities. These systems are:

- Training Resource Requirements System (TRMMS)
- Marine Corps Automated Information Management System (MCAIMS)
- Marine Corps Ammunition Requirements Management System (MCARMS)
- By Name Assignment (BNA) System
- Marine Corps Institute Automated Information System (MCIAIS)

Three of these systems, TRMMS, MCAIMS and MCARMS, are compartmentalized database applications on standalone workstations accessed by headquarters-level staff sections. The remaining systems are client-server database applications accessed by both training managers and students across the enterprise through various user interfaces including 3270 terminal emulation and the Worldwide Web through dial-up modems or the NIPRNET. Additionally, each of these information systems, with the exception of MCARMS, must exchange data with the MCTFS personnel management system to correlate training data with individual personnel records. Currently the data-exchange is accomplished through file transfer; however, future modifications to the systems will permit on-line access and data synchronization via NIPRNET.

To support distance learning delivery, the Marine Corps Distance Learning Network (MarineNet) architecture relies on decentralized distributed databases located on base/regional Metropolitan Area Networks (MANs) for local storage and distribution of asynchronous, web-based content. Management of student records is also handled locally after users are identified and authenticated (I&A) remotely through the MCIAIS database. Database calls and synchronization occurs over NIPRNET using Transmission Control Protocol/Internet Protocol (TCP/IP) protocols. Video teleconferencing technologies conforming to H.320 and T.120 standards support synchronous distance learning activities. Point-to-point and multi-point connectivity is currently provided through commercial ISDN dial-up services at fractional T-1 speeds provided through an existing Manpower and Reserve Affairs (M&RA) contract to approximately 26 sites at 14 locations. 8X5 access to VTC services and VTC help desk support is required. Distance learning products and services are provided to approximately 150,000 students per year.

During normal peacetime operations, staff training is conducted two to three times per year for MEF staffs by the Marine Air Ground Task Force Staff Training Program (MSTP) staff. These exercises are conducted at both the unclassified and classified levels. Connectivity for distributed simulations, video conferencing, and switched voice

is provided using dedicated T-1 lines. Exercise control using organizational messaging, electronic messaging, web services and file transfer is required over SIPRNET.

Formal schools that are responsible for training operators in various functional areas require access to existing and emerging operational information systems such as GCCS, CTAPS, TCAIMS, AFATDS, ATLASS and IAS through either NIPRNET and SIPRNET, as required.

3.13.5 Geographic Information

The distribution of USMC Training and Education data varies according to the function being performed. For example, access to the major training management systems located in the Quantico/Washington area is required from every Marine Corps formal school location (approximately 15 CONUS-based sites) and from approximately 45 Marine Corps Detachments located at other Service bases and stations across the country. The Training Management server applications must also exchange data with MCTFS, located in Kansas City, Missouri.

Access to distributed content such as distance learning will occur from to every base and station location within the Marine Corps as well as other Service locations where Marines are assigned for formal training (approximately 25 locations). Access to distributed simulations will occur primarily from the MEF CE locations at Camp Lejeune, Camp Pendleton and Okinawa.

Over the course of the DRM timeline, stress on NMCI is expected from the major training bases and operating force locations including: Camp Lejeune, North Carolina; Camp Pendleton, California; MCAGCC 29 Palms, California; San Diego, California; Quantico, Virginia; Marine Corps Base Hawaii; Okinawa, Japan; Parris Island, South Carolina; Yuma, Arizona; Cherry Point, North Carolina; Albany, Georgia; Barstow, California; the MCI in Washington D.C.; Ft. Sill, Oklahoma; Ft. Leonard Wood, Missouri; and the Norfolk-Tidewater region.

3.14 SERVICES - UNITED STATES MARINE CORPS

Services is one of the six Marine Corps operational/functional activity areas used in this DRM to describe how the Marine Corps performs its mission. The intent of this section is to provide a brief overview of the mission, people, and locations that relate to this function, leading to the real objective – a description of the IT infrastructure and services that must be in place to support it. The elements of the IT description will characterize how the work activities of this function place demands or stress on the IT infrastructure (NMCI) during a hypothetical set of potential environments in which the Marine Corps must be prepared to operate, as described in chapter 2. The graph in Figure 55 is provided as a way of introduction, showing the notional stress that USMC Services could be expected to place on NMCI during peace time and during increase in operational tempo. This graph was developed based on functional expert's input as reflected in Table 57.
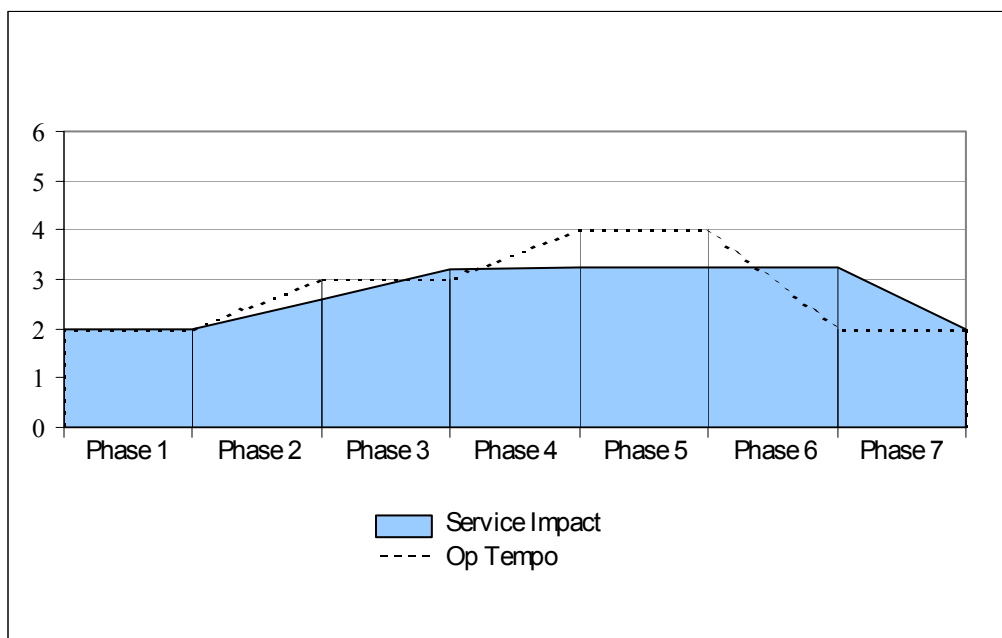
Figure 55 USMC Services Impact on NMCI Services

3.14.1 Functional Description

USMC Services functional grouping includes a wide range of base operating support activities, including billeting, family housing, public safety (police/fire/brig), food services, retail and recreation services, community and family services, religious programs, legal services, postal, public affairs, dependent schools, and base management.

This USMC Services functional impact narrative does not include the base support activities of facilities maintenance, logistics, supply, transportation, shipping, mobilization support, personnel support, medical/dental, or fiscal management functions which are covered in other functional area descriptions. This USMC Services impact narrative also does not include an assessment of the significant network support impacts that would be generated by operating force tenant organizations during a two MTW scenario.

3.14.2 Operational Activities at Phases 1-7

During Peacetime (Steady State) operation - USMC Services IT support includes a normal range of network services with NIPRNET and Internet connectivity, e-mail and messaging, 3270 access, telephony (including cell phones and pagers), help desk and end-user desktop equipment support, enterprise management and security, remote access support, VTC, and end-user training. The Peacetime Steady State IT Loading Service Level Indicator (SLI), ranges from SLI-1 at smaller locations to SLI-2 at major bases.

During a surge to one MTW - The USMC Services functional area will experience a heightened level of activity that supports planning and execution of the mobilization and deployment support of operating forces based at the

particular base/station. Increased activity will occur in legal services (execution of wills/power of attorney), in public affairs as community interest increases, in billeting as personnel movements and turnover increases, in postal operations, religious support/counseling, family support services. There will also be an increase in retail and recreation services IT usage as increased numbers of mobilized personnel use exchange and recreational facilities and blocks of recreational equipment and items are prepared for deployment with the operating forces. Also, increased turnover in family housing will occur as some spouses and children return to their home of record for the duration of the conflict and of course, a general increase in overall base management IT activity. The heightened activity in USMC Services will generate increased usage of e-mail and Web services. This will have impact on both WAN and LAN support requirements. Also, increased demand for telephony support will occur as the number of incoming calls from off-base locations increases. This will dramatically raise the stress on operator and automated attendant resources. There will be increased demand for 3270 accesses as the general level of activity increases. There will be an increase in help desk and desktop support requirements as new users are added for wartime augmentation of base support functions. Personnel increases and turnover will increase training requirements. The Services base function is not expected to have any deploying personnel during a surge to one MTW.

With heightened pre-conflict operations coincident with a surge to two MTWs based on a second geopolitical event – For USMC Services during this phase, the same general level of heightened activity and required IT support that began in Phase 2 will continue. Some additional travel/TAD will occur as base support personnel perform liaison with deployed forces at embarkation points and in the AOR. Additional increases in public affairs activity will occur as community interest in the conflict peaks and increased casualty assistance services to families occurs. In addition to the increases in IT support requirements that commenced in Phase 2, in this heightened Phase 3, there will be an increase in cellular telephone and remote data access requirements. This will be due to increased travel/TAD of base support liaison personnel. Additional cell phone support will be needed by religious and family support personnel. Increased messaging between the supporting base and deployed forces will occur. IA support requirements will increase as network attacks and resulting service disruptions increase. Enterprise network management and help desk support requirements will increase in response to service disruptions. Additional base support augmentation personnel reach full productivity and a higher level of sustained work output is demanded. Telephony support requirements will increase as a large volume of outside calls are received seeking information about the status of deployed personnel. The Services base function is not expected to have any deploying personnel during a surge to two MTWs based on a second geopolitical event.

With the rise to sustained operations at two MTWs - USMC Services additional increases in IT support activity will occur with shortened timeframes being a major factor. It is expected that this second iteration would be supported largely by the same expanded base support structure that supported deployment for the first MTW during Phase 2. Previously increased levels of network support requirements continue with some increase in e-mail traffic likely as all personnel communicate to expedite work to meet short timeframes.

For sustained operational transition to a completion of hostilities - the same heightened level of IT support activity for USMC Services continues.

At the completion of hostilities and the return to steady-state operations - For USMC Services the same heightened level of activity continues. Redeployment operations require a similar level of support activity as during the initial deployment phase. A return to peacetime operations as described in Phase 1 occurs. A full return to the same the level of Phase 1 IT support may not occur. There will be a general trend to increased dependence on IT during the two MTWs. This would likely result in a continuation of the increases in e-mail support, Web services, and cellular/wireless services, and in general LAN and WAN support requirements.

3.14.3 Specific IT Support

IT support to the USMC Services function includes a normal range of network services including NIPRNET and Internet connectivity, e-mail and messaging, 3270 access, telephony (including cell phones and pagers), help desk and end-user desktop equipment support, enterprise management and security, remote access support, VTC, and end-user training.

The following figures graphically depict the impact that USMC Services functions will have on the six, key NMCI service groupings (Security, Enterprise Network Management, Help Desk, Wide Area Network Connectivity, Base Area and LAN Services, and Video Teleconferencing) during the notional DRM scenario. The supporting data used to develop these graphs is presented in Table 57. The most notable stresses resulting from USMC Services activities occur for Help Desk.
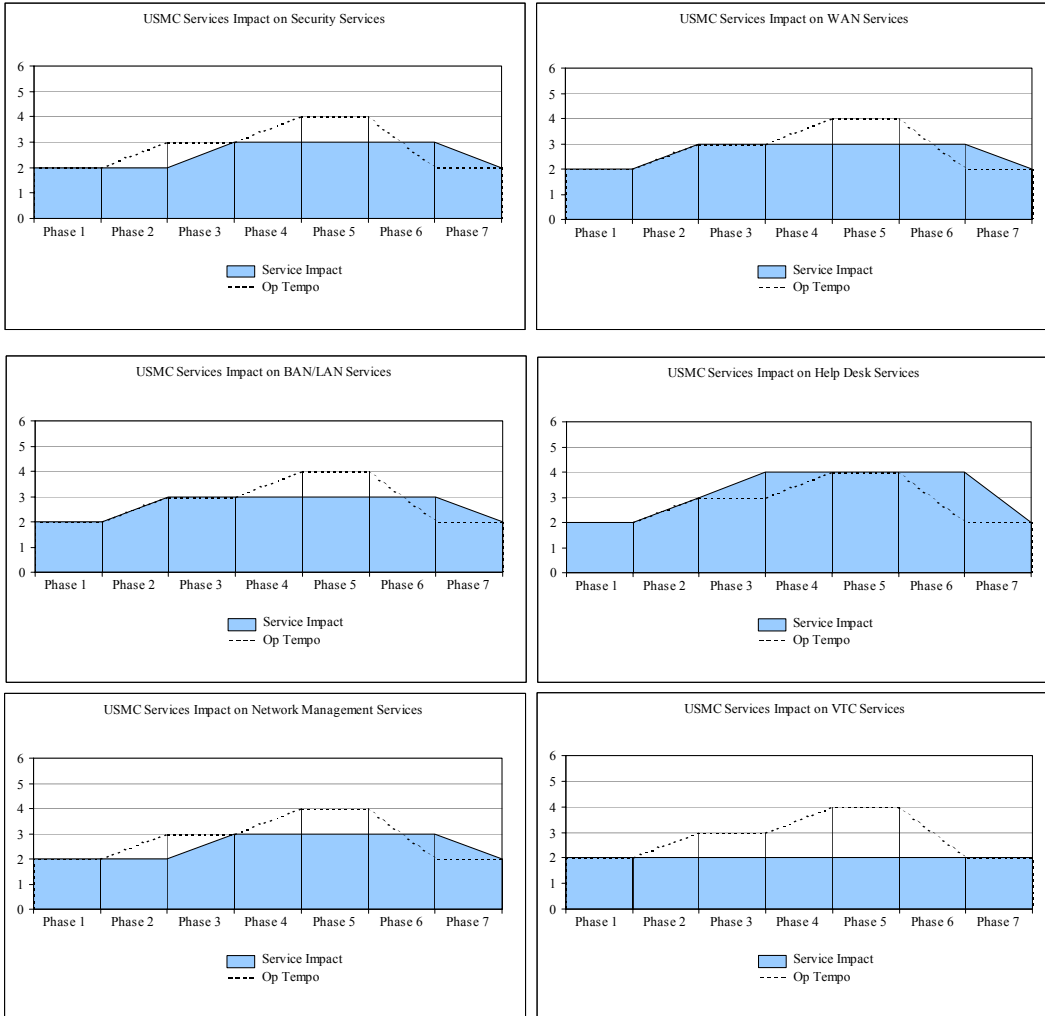
Figure 56 Individual Service Impacts for USMC Services

The operational/functional IT managers estimated stress data for the list of 13 NMCI services introduced in chapter 2.The data includes the six graphically depicted above plus seven others. The complete set of data is presented in the NMCI Services Impact Worksheet below.

USMC Services

Network Services	Phase 1 Peacetime Ops	Phase 2 Deploy MTW1	Phase 3 Employ MTW1	Phase 4 Deploy MTW2	Phase 5 Employ MTW1/2	Phase 6 Redeployment	Phase 7 Peacetime Ops
Security Services: firewalls, intrusion detection, availability, encryption.	Steady State	0	1	0	0	0	-1
Wide Area Network Connectivity: Access to DISN (SIPRNET & NIPRNET); commercial WAN; Internet. Includes capacity, functionality, and assurance.	Steady State	1	0	0	0	0	-1
Base Area and Local Area Network Services: Voice, video and data; End-user to WAN POP; Assumes classified and unclassified; Includes availability, capacity, functionality, and assurance.	Steady State	1	0	0	0	0	-1
Desktop Hardware and Software: Provisioning / relocating of end user desktop suites.	Steady State	1	0	0	0	0	-1
Help Desk and Technical Support: Touch labor & support to users.	Steady State	1	1	0	0	0	-2
Enterprise Network Management: Includes perf mngt, directory, DNS, connectivity or accounts (adds/moves/ deletes), VPN spt, sys integration, config mngt, capacity planning; class and unclass.	Steady State	0	1	0	0	0	-1
Organizational Messaging: AUTODIN & DMS	Steady State	0	1	0	0	0	-1
Email: Capacity, availability, classified and unclassified.	Steady State	1	1	1	0	0	-3
Web Services: Web enabled applications hosting; search engines; news group services; web site hosting.	Steady State	1	1	0	0	0	-2
Remote Telephone Access	Steady State	0	1	0	0	0	-1
Video-teleconferencing: Including capacity, availability, management and set up of sessions.	Steady State	0	0	0	0	0	0
Telephony: Switched voice, voice over data, cellular service, pagers.	Steady State	1	1	0	0	0	-2
Training: System administrator, end user training.	Steady State	1	0	0	0	0	-1
Weighted Average of Impact on NMCI Services. First cell is Steady State SLI.	2.00	2.60	3.20	3.25	3.25	3.25	2.00

Table 57 USMC Services

USMC Services function IT Service requirement priorities and associated measures of effectiveness.

Priority	IT Service	Performance Measures
1	Telephony (switched voice, voice over data, cellular service, pagers)	Availability
2	Base Area and LAN Services (voice, video and data)(end-user POP; assumes classified and unclassified)	Availability
3	Wide Area Network Connectivity (access to DISN (SIPRNET and NIPRNET), commercial WAN, Internet)	Availability
4	Help Desk and Technical Support (touch labor, support to users)	Customer Support
5	Enterprise Network Management (includes performance management, directory, domain name system, connectivity or accounts adds/moves/deletes, VPN support, systems integration, configuration management, capacity planning (include classified and unclassified)	Availability
6	Email (capacity, availability, classified and unclassified)	Availability
7	Security Services (firewalls, intrusion detection, availability, encryption)	Survivability
8	Web Services (web enabled applications hosting, search engines, news group services, web site hosting)	Availability
9	Desktop Hardware and Software (provisioning/relocating of end user desktop suites)	Customer Support
10	Organizational Messaging (AUTODIN, DMS)	Availability
11	Remote Telephone Access	Availability
12	Training (system administrator, end user training)	Training
13	Video-teleconferencing (including management and set up of sessions)	Availability

Table 58 USMC Services Function IT Service Priorities and Performance Measures

3.14.4 Supported Systems.

The use of several major systems requiring 3270 access by users in this USMC Services function includes: SABRS (fiscal accounting), MANIS (family housing mgmt), MCFMIS (food services), STORES (subsistence procurement), MWRNet, CORMIS (Brig), E-911, and PoliceTrak. Also supported are approximately 25 locally developed systems that interface with these major systems and support the administrative requirements of the various base support activities in this functional area.

3.14.5 Geographic Information.

This USMC Services functional area is resident at all Marine Corps bases/stations. During steady state conditions, all locations will require similar types of network support although the Service Level Indicator (SLI) will primarily be at level 1 at the small locations and at level 2 at the major bases.

As the support requirements escalate to two MTW, the initial overall level of system stress will be greatest at those locations that house major deploying units: Camp Lejeune, North Carolina; Camp Pendleton, California; Okinawa, Japan; Cherry Point, North Carolina. As operations fully encompass two MTW, the increased IT support requirements spread to all major bases/stations that have a training or logistical support mission; MCAGCC 29 Palms, California; San Diego, California; Parris Island, South Carolina; Barstow, California; Albany, Georgia; Quantico, Virginia.

During the drawdown to steady state operations, the IT support requirements will decline more rapidly at the training base locations as the increased training throughput is ended. The heightened IT support requirements will continue longer at the major bases that house deploying units as the units move through the process of phased withdrawal from the AOR and the demobilization process is supported over a period of time.

3.15 ACQUISITION - UNITED STATES MARINE CORPS

Acquisition is one of the six Marine Corps operational/functional activity areas used in this DRM to describe how the Marine Corps performs its mission. The intent of this section is to provide a brief overview of the mission, people, and locations that relate to this function, leading to the real objective – a description of the IT infrastructure and services that must be in place to support it. The elements of the IT description will characterize how the work activities of this function place demands or stress on the IT infrastructure (NMCI) during a hypothetical set of potential environments in which the Marine Corps must be prepared to operate, as described in chapter 2. The graph in Figure 57 is provided as a way of introduction, showing the notional stress that Acquisition could be expected to place on NMCI during peace time and during increase in operational tempo. This graph was developed based on functional expert's input as reflected in Table 60.
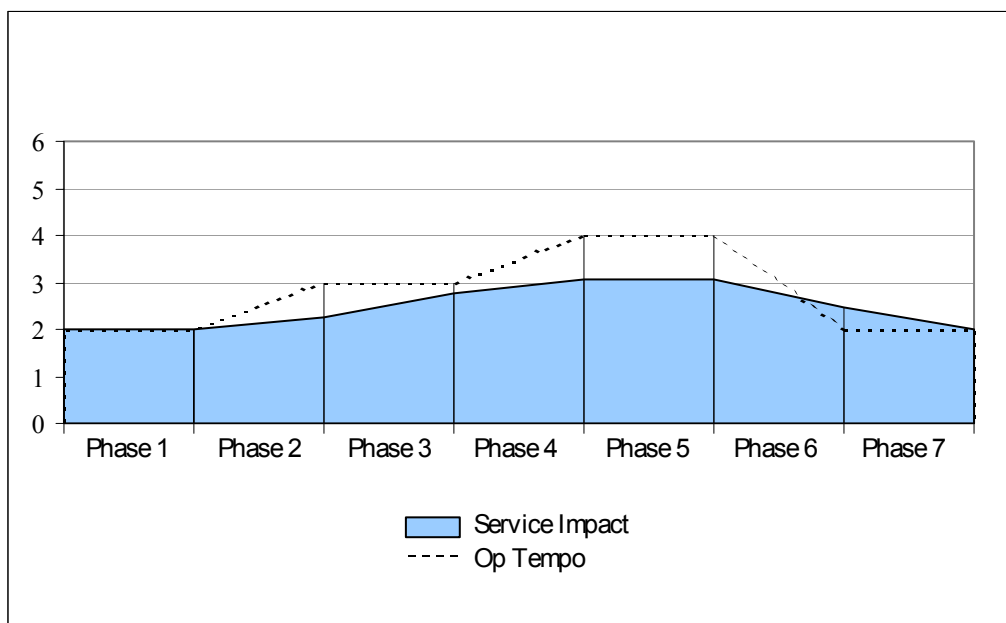
Figure 57 Acquisition Impact on NMCI Services

3.15.1 Functional Description

The mission of Acquisition is to turn materiel needs into reality. The Commander, Marine Corps System Command (MARCORSYSCOM) is responsible for all fiscal and technical support of the materiel acquisition process. Upon the advice of MCCDC that a need involving the acquisition of new equipment exists, SYSCOM evaluates appropriate alternatives, develops a strategy for acquisition, and executes the strategy. Inherent to this process is the testing, fielding, and sustainment of the materiel solution.

The "acquisition process" begins with the validation of a materiel need by the MCCDC. MCCDC evaluates identified needs in terms of doctrine, organization, training, equipment, and supporting facilities Doctrine, Organization, Training, Equipment, and Support (DOTES). Equipment needs identified in the DOTES process are passed to the Marine Corps Systems Command (MARCORSYSCOM) for development. Upon completion of development the Marine Corps Operational Test and Evaluation Activity (MCOTEA) independently verifies performance of selected materiel systems. The Materiel Command (MATCOM) then ensures the successful fielding, sustainment, and eventual disposal of the Marine Corp materiel equipment. MARCORSYSCOM, as part of MATCOM, is responsive for the Marine Corps Materiel Readiness.

USMC Acquisition function infrastructure facilities are classified as follows:

Region / Location	Civilian and Military Personnel
SYSCOM, Quantico, VA	678
SYSCOM, Albany, GA	225
AV Test Branch, Camp Pendleton, CA	52
MCTSSA, Camp Pendleton, CA	387
SYSCOM (PM LAV), Warren, MI	8
SYSCOM (PM LW155)	9
MCOTEA, Quantico VA	42
Total	**1401**

Table 59 USMC Acquisition IT User Personnel Distribution

3.15.2 Operational Activities at Phases 1-7

During Peacetime (Steady State) operation, Acquisition must provide for the materiel requirements of the Marine Corps operational commands and supporting establishments. Acquisition activities in this phase are driven by requirements generated out of the MCCDC. Industry interface and use of industry best practices necessitates adoption of a highly IT dependant infrastructure and IT capable workforce. The steady state IT Loading Service Level Indicator (SLI) during this phase is SLI-2. Acquisition employs a moderate number of legacy applications, document transfers, use of multimedia, VTC, and significant database administration.

During a surge to one MTW - The steady state IT loading service level indicator (SLI) during this phase is SLI-2. The Acquisition community employs a moderate number of legacy applications, document transfers, use of multimedia, VTC, and significant database administration. Acquisition demand of IT services changes little in response to this phase. The increased requirements for email, VTC, telephony, and organizational messaging will increase bandwidth requirements however these requirements will remain CONUS-based. During a surge to one MTW no Acquisition personnel would be expected to be deployed.

With heightened pre-conflict operations coincident with a surge to two MTWs based on a second geopolitical event - The steady state IT loading service level indicator (SLI) during this phase remains SLI-2. The Acquisition community employs a moderate number of legacy applications, document transfers, use of multimedia, VTC, and significant database administration. Acquisition agencies continue to maintain a moderate to heavy steady state dependence on IT services. Increased LAN activity, and access to classified message traffic and VTC will increase bandwidth utilization. Overall, increased voice data and video usage will require increased capacity through the POP to the Internet. Additionally, previously not required, access to the SIPRNET will now be required, thereby increasing processor support and network utilization for supported Public Key Infrastructure (PKI) or other encryption methods. Local help desk services would be required to support the increased and newly exercised activity.

During sustained operations at two MTWs - The steady state IT loading service level indicator (SLI) during this phase is SLI-3. The Acquisition community employs an increased number of document transfers, increased use of multimedia, VTC, and will incur significantly increased database administration requirements.   Acquisitions activities would functionally remain unchanged from the previous phase; however, activity would increase in volume and frequency. The increase in voice, video, and data communications will place greater demands on the network backbone.

During sustained operational transition to a completion of hostilities - no change to Acquisitions IT requirements from Phase 4-5 Deploy MTW 2 profile. The steady state IT loading service level indicator (SLI) during this phase remains SLI-3 for the reasons enumerated above in sustained operations at two MTWs

At the completion of hostilities and the return to steady-state operations – The steady state IT loading service level indicator (SLI) during this phase returns to SLI-2. Acquisitions IT requirements across the spectrum would decrease to that experienced in the Phase 3-4 / Employ MTW 1 profiles with gradual reductions of IT support to original steady state levels.

3.15.3 Specific IT Support

Acquisition agencies maintain a moderate steady state dependence on IT services. Specifically, IT services to include WAN, E-mail, LAN, VTC (to include VTC to the desktop), and telephony are required resources to conduct daily business. The local help desk function services are important to this phase to support the Acquisitions workforce.

The Acquisition community relies on base level infrastructure and DISA to meet its wide-area interoperability needs. The community is very reliant on external communications to industry and other services. Moderate amounts of data reside on distributed databases throughout CONUS and must be readily available.

The Acquisition community uses Windows NT on its desktops and runs a variety of PC-based servers as well as minis and mainframes. Most applications are client/server based but future plans seek to use a Web-based enterprise information portal, which will significantly increase reliance on communications across the NMCI.

During steady state operations, the Acquisition community's operations are characterized by periods of moderate demand for data. This primarily includes programmatic and associated financial data. Due to an ever-greater reliance on the Internet, email, VTC, and database administration, the steady state demand is increasing. A shortage of necessary IT Help-desk support has been a continual concern. Help Desk services are 8 x 5 and provided locally (SYSCOM, Quantico, VA).

At the surge to one and two MTWs, the majority of IT needs can be met locally with Help Desk services; however, a greater demand will be placed on other IT services such as WAN support for which external support is required.

During redeployment, IT support services return to levels associated with steady state operations.

The following figures graphically depict the impact that USMC Acquisition functions will have on the six, key NMCI service groupings (Security, Enterprise Network Management, Help Desk, Wide Area Network Connectivity, Base Area and LAN Services, and Video Teleconferencing) during the notional DRM scenario. The supporting data used to develop these graphs were presented previously in Table 60. The most notable stresses resulting from USMC Acquisition activities occur for VTC services and other impacts are relatively flat or stable when compared to other functional areas.
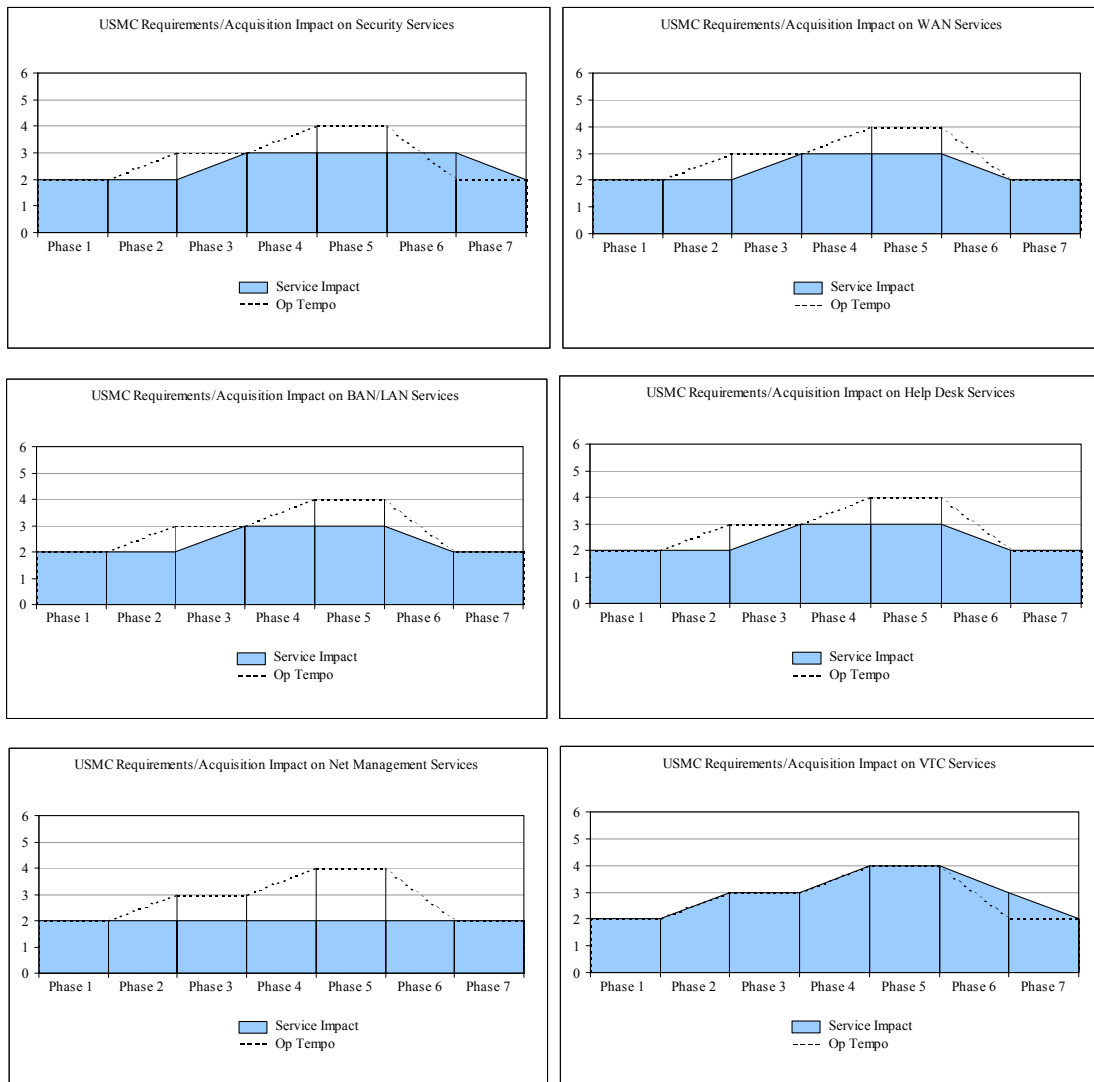
Figure 58 Individual Service Impacts for Acquisition

The operational/functional IT managers estimated stress data for the list of 13 NMCI services introduced in chapter 2.The data includes the six graphically depicted above plus seven others. The complete set of data is presented in the NMCI Services Impact Worksheet below.

USMC Acquisition

Network Services	Phase 1 Peacetime Ops	Phase 2 Deploy MTW1	Phase 3 Employ MTW1	Phase 4 Deploy MTW2	Phase 5 Employ MTW1/2	Phase 6 Redeployment	Phase 7 Peacetime Ops
Security Services: firewalls, intrusion detection, availability, encryption.	Steady State	0	1	0	0	0	-1
Wide Area Network Connectivity: Access to DISN (SIPRNET & NIPRNET); commercial WAN; Internet. Includes capacity, functionality, and assurance.	Steady State	0	1	0	0	-1	0
Base Area and Local Area Network Services: Voice, video and data; End-user to WAN POP; Assumes classified and unclassified; Includes availability, capacity, functionality, and assurance.	Steady State	0	1	0	0	-1	0
Desktop Hardware and Software: Provisioning / relocating of end user desktop suites.	Steady State	0	0	1	0	-1	0
Help Desk and Technical Support: Touch labor & support to users.	Steady State	0	1	0	0	-1	0
Enterprise Network Management: Includes perf mngt, directory, DNS, connectivity or accounts (adds/moves/ deletes), VPN spt, sys integration, config mngt, capacity planning; class and unclass.	Steady State	0	0	0	0	0	0
Organizational Messaging: AUTODIN & DMS	Steady State	0	1	1	0	-1	-1
Email: Capacity, availability, classified and unclassified.	Steady State	1	0	1	0	0	-2
Web Services: Web enabled applications hosting; search engines; news group services; web site hosting.	Steady State	0	0	0	0	0	0
Remote Telephone Access	Steady State	1	0	0	0	0	-1
Video-teleconferencing: Including capacity, availability, management and set up of sessions.	Steady State	1	0	1	0	-1	-1
Telephony: Switched voice, voice over data, cellular service, pagers.	Steady State	1	0	1	0	-1	-1
Training: System administrator, end user training.	Steady State	0	0	0	0	0	0
Weighted Average of Impact on NMCI Services. First cell is Steady State SLI.	2.00	2.25	2.75	3.05	3.05	2.45	2.00

Table 60 USMC Acquisition

The Acquisition's area functional measures of effectiveness are identified below. These priorities and the associated measures of effectiveness are necessary to achieve adequate IT support as already identified for each phase (Table 61).

Priority	IT Service	Performance Measure
1	Ability to transfer financial data	Assurance
2	Ability to transfer program data	Reliability

Table 61 Acquisitions Function IT Service Priorities and Performance Measures

3.15.4 Supported Systems

There are currently at least 16 Acquisitions data and information systems. Acquisitions functional users need access to these applications for the following purposes; information searches, document access, financial reporting, paperless acquisitions, collaboration, document distribution, archiving and repositories. The information systems supporting Acquisitions are functionally aligned and operate primarily as locally networked computer environments, Web based, or mainframe systems. Future developments include consolidation of systems to a Web-centric application that provides a single architecture for securely searching, analyzing, and delivering all types of enterprise data, giving user's a productive, personalized view into the command's business information.

3.15.5 Geographic Information

The governmental portion of the Acquisitions workforce operates in a LAN environment with select nodes in outlying geographical areas. Additionally, Industry interface necessitates communications and data exchange outside of the LAN environment to bridge geographical separation. Use of Remote Access Servers (RAS) and VPN are essential to the performance of the Program Managers mission when geographically separated from the command. Acquisitions systems data is centrally located but must be shared across the Marine Corps enterprise to incorporate the Acquisition process stakeholders such as HQMC, MATCOM, MCCDC, MCOTEA, OLA, as well as our business partners.

4 DRM FINDINGS AND CONCLUSIONS

4.1 INTRODUCTION

The previous section of the DRM presented a series of notional NMCI service stress profiles for each of the Navy and Marine Corps operational/functional areas. These profiles show the general tendencies in steady state as well as the more demanding mobilization environments that characterize the outer limits of the demands placed on the IT infrastructure.

In this section, the general findings from the operational/functional area descriptions are presented. These findings include similarities and contrasts that became apparent from the review of the descriptions provided by the operational/functional experts from throughout the DoN.

Also, those profiles describing each of the operational/functional areas are combined to derive notional profiles for specific CONUS and Hawaii geographic areas. This is done by determining the population of the operational/functional users in each geographic concentration area and applying their user profiles proportionately.

More detailed geographic area information is then provided by breaking the operational/functional profiles down further into their component NMCI services (e.g., help desk, video-teleconferencing, security services). This provides a reasonable indication of the NMCI service specific tendencies of the Navy and Marine Corps stress on the NMCI that the service provider can expect to encounter in a particular area (e.g., San Diego, Norfolk). This affords potential service providers with greater insight into areas that may require greater focus during the conduct of "due diligence."

Still other conclusions about geographic areas and bases can be gained by identifying geographical areas or bases that are home to a single Navy or Marine Corps predominant function. A significant number of areas or bases are home to functions such as personnel, logistics, training, and acquisition (to include laboratories and T&E). NMCI stress profiles for these particular areas or bases can be largely defined by the applicable functional profile. This section lists those particular areas and bases.

Finally, the findings with regard to performance appraisal is presented. These performance measures identified in chapter 3 were viewed with varying priorities by each of the operational/functional areas. These priorities varied even within an area from steady state through the phases of MTW. This discussion provides a description of the way in which the varying priorities of separate operational/functional activities are appropriately weighted to assess and ensure performance.

4.2 GENERAL FINDINGS

While global network connectivity is essential to achieve information superiority, it is not sufficient. The entire information infrastructure, to include enterprise systems and data, must be planned, coordinated and aligned under a single, coherent and forward-looking strategy. The information infrastructure must collectively ensure that warfighters and decision makers are provided with the right information, at the right place, at the right time, and in the right format. Therefore, the NMCI solution and strategy must be aligned with and support related initiatives to improve information management.

Significant initiatives are currently underway in Navy and Marine Corps to improve the capabilities and processes by which information is managed and made available to users. These initiatives place increased emphasis on fast, efficient communication of required information, to create advantage for the warfighters and the personnel that support them. These advantages include access to required information resources, speed of command/prosecution, and reduced cycle time. They are articulated in a strategy known as "network centric warfare" and part of a DoD concept known as Joint Vision 2010. To maintain these advantages, the strategies and solutions for the information infrastructure must provide for a continually advancing target of capability and performance. Clearly, the NMCI solution must be forward thinking, have the ability to be continually updated for new processes, requirements and technology, and be able to adapt to changing threats.

At the nexus of strategies for improving enterprise systems and knowledge management is the sharing of common data. The need for enterprise information systems to have visibility into and to share common data across widely distributed geographic areas should be supported by the NMCI. NMCI should leverage current and emerging

techniques and technologies to enable cross-process, cross-functional sharing of information in order to continually improve the efficiencies and effectiveness of DoN business and warfighting processes.

4.2.1 Operational/Functional Area Conclusions

The examination of the operational/functional area profiles provided some readily distinguishable and useful information. These profiles offer valuable information for understanding both the differences and the commonalties of Navy and Marine Corps customers of the NMCI.

- The total number of Navy and Marine Corps personnel (military and civilian) is different than the number of NMCI users; in fact, some operational/functional areas may have a user percentage well below 50 percent of the total geographic population of personnel within that operational/functional area.

- Larger geographic concentration areas such as Norfolk, Camp Pendleton, San Diego, and Pearl Harbor tend to have the most even distribution of the seven categories of operational/functional users.

- Some organizations such as CINCLANTFLT, MARFORLANT, and CINCPACFLT are very regionalized while organizations like MARFORRES, MARFORPAC, NAVSEA and CNET are distributed across wide areas. These characteristics have produced different sets of expectations for network services.

- The SYSCOMs tend to be the most robust users during peacetime but their demand for services is relatively flat over the operational tempo profile phases.

- The Logistics activities are robust users in peacetime and exhibit perhaps the greatest increase in demand for services during one and two MTWs.

- BOS includes approximately 140 assorted activities and a large number of people, but these users tend to be the least demanding of the potential NMCI users.

4.3 GEOGRAPHIC ACTIVITY PROFILES

The aggregate operational/functional area profiles depicted in Figure 59 and Figure 60 provide a rough approximation of the average users within Navy and Marine Corps. The quantitative value of these aggregate profiles is questionable but these profiles do serve to make some conclusions relative to NMCI customers
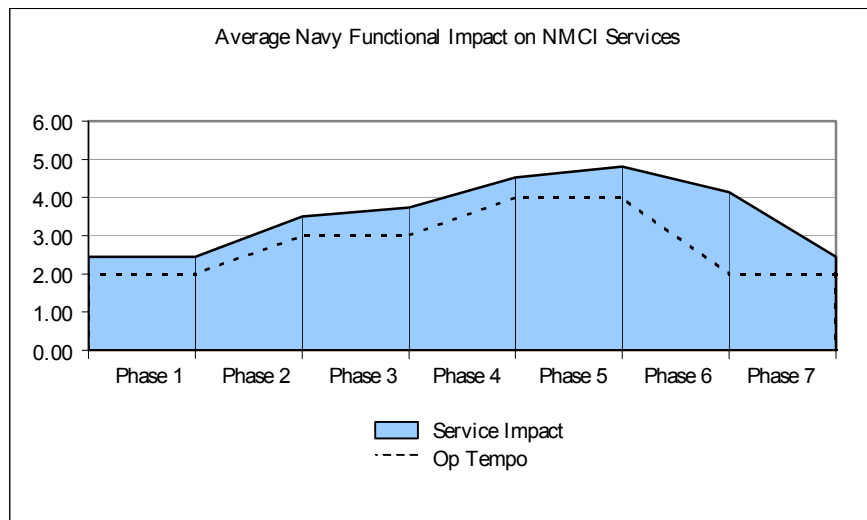
Figure 59 Aggregate NMCI Customer Profile – Navy

Average Marine Corps Functional Impact on NMCI Services
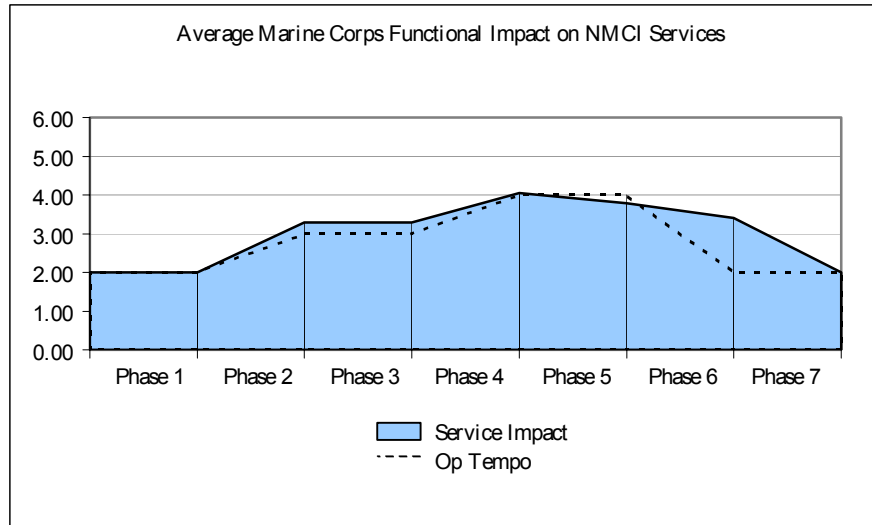
Figure 60 Aggregate NMCI Customer Profile – Marine Corps

The number of Marine Corps users can be derived based on the Table of Organization and Table of Equipment Study (TO/TE) conducted by the Marine Corps Combat Development Command in 1998. The results of that study yielded authorized allowances for workstations for every Marine Corps unit. Those allowances equate to the expected number of NMCI Marine Corps users. The Navy has no similar documentation and a methodology is presented here to derive the expected number of NMCI Navy users.

The most populous geographic concentration areas home to Navy activities in CONUS and Hawaii are presented in Table 62. For each area included, numbers of assigned Navy personnel (military and civilian) are depicted. These are APPROXIMATE NUMBERS, they are not official end strengths, exact populations or precise distributions among geographic or operational/functional areas. They are groupings that enable general characterizations of the Navy and Marine Corps NMCI user base. These numbers do not place limits on the final NMCI user population.

Geographic Area	Navy CONUS & Hawaii	Operational			Personnel	Logistics	Medical	Base Operating Support	Training	Acquisition
		Navy Shipboard/Ops	Embark ables	HQ/Staffs/ Shore Ops						
New England	11,825	2,300		1,475	50	250	1,000	1,050	700	5,000
Philadelphia PA	5,150					5,150				
Washington DC	21,550			4,500	700	1,050	1,850	3,100	7,050	3,300
Patuxent River MD	17,700				50	50	100	2,500		15,000
Hampton Roads VA	105,350	46,150	5,450	14,950	300	18,400	3,200	8,700	1,050	7,150
Charleston SC	5,255	50		2,155	200	950	50	750	1,100	
Jacksonville FL	28,750	7,100	350	5,100	300	6,500	1,450	4,650	600	2,700
Millington TN	2,100				2,100					
Pensacola FL	8,850			600	200	250	1,100	2,250	4,450	
New Orleans LA	3,200			1,550	550	300		600	200	
South Texas	5,750	1,600		1,200	50	550	300	1,700	350	
Great Lakes	5,850			50	350	50	1,300	1,450	2,650	
San Diego CA	68,550	29,750	3,750	14,100	1,100	6,500	1,600	7,850	1,400	3,000
Ventura County CA	19,800		500	4,050	100	6,650	200	50	250	8,000
Puget Sound WA	42,675	17,800	2,950	4,075	350	12,100	1,000	3,600	800	8,200
Pearl Harbor HI	19,730	5,800	80	7,050	250	3,300	450	2,300	500	
Other	62,150				3,050	3,450	950	19,750	2,450	32,500
Total	434,235	110,550	13,080	60,855	9,690	65,511	14,537	60,300	23,530	84,850

Table 62 Navy Personnel Distribution (Military and Civilian)

The degree to which the DRM accurately represents geographic profiles is, in part, dependent upon the degree to which the users contained within the seven operational/functional areas are similar in their NMCI requirements. As a result, a number of assumptions are made to maximize the amount of homogeneity within activities:

- For Navy purposes, the population of operational (shipboard and embarkable) users includes the total population assigned to the ships home ported in an area; during normal peacetime operations the actual number of ships (and users) in port at any one time is one-third; that number (1/3 of the table number) of users is used for the basis of NMCI loading.
- Shipboard and embarkable numbers do not include any OCONUS home ported ships.
- Operational is a broad activity description encompassing tactical areas of shipboard, submarine, aviation, embarkable staffs, metrology and oceanography, intelligence, headquarters, and staffs.
- For logistics, the areas of depot maintenance, transportation, and supply are contained under the logistics because they are deemed most user similar, even though some of these activities may be under separate commands, e.g., NADEPS under NAVAIR, Shipyards under NAVSEA.
- Base Operating Support includes over 100 functions normally performed by that category of personnel and is the most diverse in functional scope.
- Training does not include students.
- Acquisition, although it does not include the Logistics functions of supply and maintenance, does include T&E, and laboratories.
- The medical and dental functional area is consolidated for the Navy and Marine Corps and includes all hospitals, clinics, and associated management and support organizations.
- The populations shown do not include on-site contractors who are also users of NMCI; that number varies according to functional area and site but the impact is, on average, an additional 20 percent stress.
- The other category covers a multitude of CONUS and Hawaii mid-size and smaller bases, labs, shipyards, weapons centers, and the like. Some of these will be addressed later this section.

The percentage of NMCI users to total population assigned varies widely across the operational/functional activities – some personnel do not require user services. In those operational/functional categories where the percentage of users is not known, an estimate of the percentage of expected NMCI users is projected based on best information

available. The following percentage assumptions as represented in the figure below are used for the purposes of user projections where more precise user (seat) numbers are not available.

		Operational			Personnel	Logistics	Medical	Base Operating Support	Training	Acquisition
		Navy Shipboard/ Ops	Embark ables	HQ/Staffs/ Shore Ops						
Percentage of Users		60	60	90	100	70	70	60	100	90

Table 63 Percentage of Users per Operational/Functional Area

Applying the percentages from Table 63 to the previous Navy personnel distribution in Table 62 provides a rough order approximation of the population of NMCI users. This technique can be performed with high confidence in some functional areas but presents challenges in areas such as logistics, where some user sub-groups are at 100 percent and others are at 50 percent. The resulting list of users is shown in Table 64.

Geographic Area	Navy CONUS & Hawaii	Operational			Personnel	Logistics	Medical	Base Operating Support	Training	Acquisition
		Navy Shipboard/ Ops	Embark ables	HQ/Staffs/ Shore Ops						
New England	8,543	460	0	1,328	50	175	700	630	700	4,500
Philadelphia PA	3,605	0	0	0	0	3,605	0	0	0	0
Washington DC	18,660	0	0	4,050	700	735	1,295	1,860	7,050	2,970
Patuxent River MD	15,155	0	0	0	50	35	70	1,500	0	13,500
Hampton Roads VA	51,900	9,230	1,090	13,455	300	12,880	2,240	5,220	1,050	6,435
Charleston SC	4,400	10	0	1,940	200	665	35	450	1,100	0
Jacksonville FL	17,765	1,420	70	4,590	300	4,550	1,015	2,790	600	2,430
Millington TN	2,100	0	0	0	2,100	0	0	0	0	0
Pensacola FL	7,485	0	0	540	200	175	770	1,350	4,450	0
New Orleans LA	2,715	0	0	1,395	550	210	0	360	200	0
South Texas	3,415	320	0	1,080	50	385	210	1,020	350	0
Great Lakes	4,860	0	0	45	350	35	910	870	2,650	0
San Diego CA	36,500	5,950	750	12,690	1,100	4,550	1,120	4,710	1,400	4,230
Ventura County CA	16,120	0	100	3,645	100	4,655	140	30	250	7,200
Puget Sound WA	27,678	3,560	590	3,668	350	8,470	700	2,160	800	7,380
Pearl Harbor HI	12,276	1,160	16	6,345	250	2,310	315	1,380	500	0
Other	48,150	0	0	0	3,050	2,415	665	11,850	2,450	27,720
Total	281,326	22,110	2,616	54,770	9,700	45,850	10,185	36,180	23,550	76,365

Table 64 Estimate of Prospective Navy NMCI Users

The Navy user estimates do not account for on-site contractors that will be users of NMCI. The best information available for an estimate of the additional loading represented by on-site contractors over the estimates above is presented in Table 65. These percentages appear to be low, particularly in some functional such as Base Operating Support. The impact of these on NMCI was not factored in to this analysis. These on-site contractors will receive support from NMCI appropriate to their acquired seat.

	Contractors	Total Work Force (Navy)	Percent
Operational	3,764	194,154	2%
Personnel	327	13,032	3%
Training	1,660	28,869	6%
Logistics	4,662	62,821	7%
Medical	1,182	21,558	5%
Base Operating Support	7,376	194,154	4%
Acquisition	3,911	30,923	13%
Total	22,882	545,511	4%

Table 65 Estimate of Navy On-Site Contractors

The TO/TE established workstation allowances for Marine Corps NMCI users, shown in Table 66, details every major Marine Corps base and station.

MARCORP CONUS & Hawaii	Users by Site	Operational	Personnel	Logistics	Services	Training	Acquisition
HQMC	5,219	838	1,311	474	1,494	913	189
MCB Quantico	6,871	174	102	0	1,077	1,225	4,293
MCRD Parris Island	3,715	0	2,745	0	813	157	0
MCRD San Diego	3,355	0	2,544	0	598	213	0
MCAGCC 29 Palms	1,298	0	0	0	792	506	0
MCLB Albany	1,256	0	0	1,256	0	0	0
MCLB Barstow	723	0	0	723	0	0	0
MCLB Blount Island	31	0	0	31	0	0	0
MARFORLANT	519	241	242	0	36	0	0
MCB Camp LeJeune	8,396	2,605	2,211	412	1,967	1,201	0
MCAS Cherry Point	4,309	1,779	203	1,403	701	223	0
MCAS New River	308	0	0	0	308	0	0
MCAS Beaufort	477	0	0	0	477	0	0
MCAS K-Bay/Camp Smith	1,296	0	959	0	327	10	0
Camp Pendleton	8,800	1,986	1,940	791	3,634	449	0
MCAS Miramar	964	239	188	377	160	0	0
MCAS Tustin/El Toro	3,185	998	245	645	1,201	96	0
MCAS Yuma	797	65	45	123	564	0	0
MARFORRES	776	144	66	0	566	0	0
Reserve Forces	7,159	7,159	0	0	0	0	0
Kansas City	1,492	0	1,492	0	0	0	0
	60,946	16,228	14,293	6,235	14,715	4,993	4,482

Table 66 Estimate of Prospective Marine Corps Users

The numbers for the Marine Corps, as stated, represent authorized allowances for workstations. These numbers are not exact.

The identification of selected geographical areas provides a picture of a large percentage of the Navy and Marine Corps users and their collective stress on the NMCI. The approach is to weigh the operational/functional user profiles established according to the population demographics in the geographic area. This can be a valuable indicator of stress if care is taken to separate the effects of large user numbers from the impacts of the stress that certain user services have on NMCI. The effects of a small population of users using bandwidth intensive services can be very significant stress on the overall system and their impact should not be masked by sheer numbers of other users that may not be stressing NMCI.

The geographic areas considered account for approximately 60 percent of the CONUS and Hawaii user population. Areas selected are: Hampton Roads, San Diego/Camp Pendleton, Puget Sound, Hawaii, and National Capital Region

By focusing on these five geographic areas presented in Figure 61 through Figure 65, the graphical views of comparative aggregate user stress at these areas is very revealing. Clearly, both steady state and surge potential are different and require appropriate solutions. Hampton Roads and San Diego, as driven primarily by operational and logistical use of NMCI, will exert above average stress during peacetime and significantly high stress during phases 4 and 5 of the MTW scenario. This appears to be driven largely by the large Navy and Marine Corps presence in these areas. The factors that make up these high stress environments will be revealed in the next section. Stress profiles represent a stacked presentation of operational/functional stresses for all services in the concentration area. The level of stress for each functional layer on the diagram is the product of that user population in the geographic area and their relative stress factors reported across the seven phases of the DRM scenario.
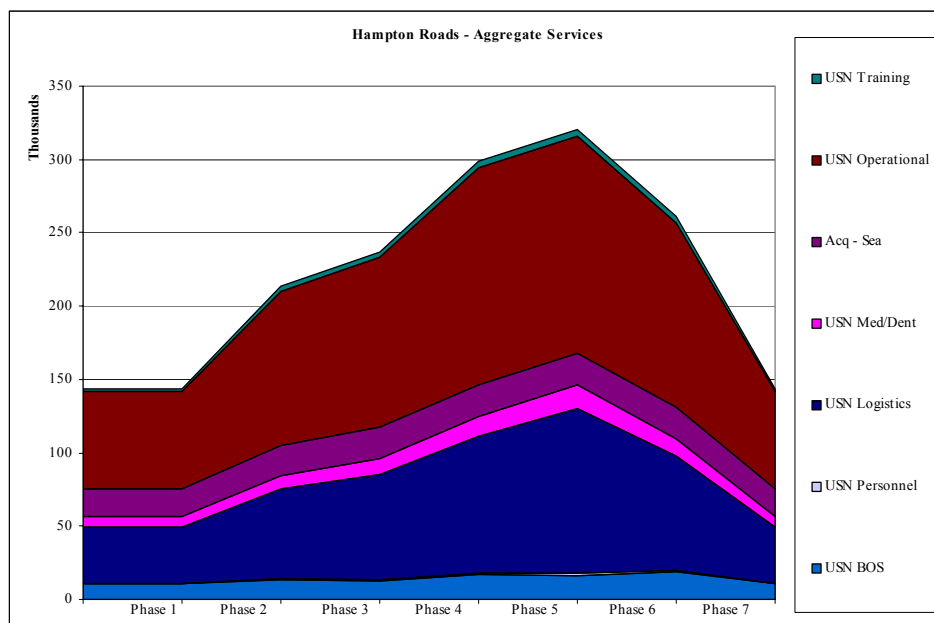
Figure 61. Geographic Stress Profile - Hampton Roads
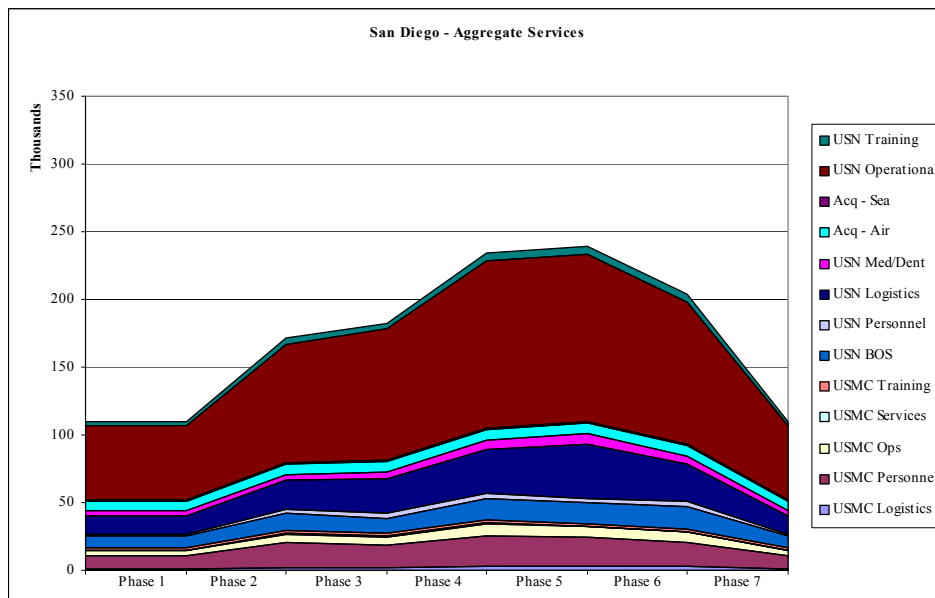
Figure 62. Geographic Stress Profile – San Diego/Camp Pendleton
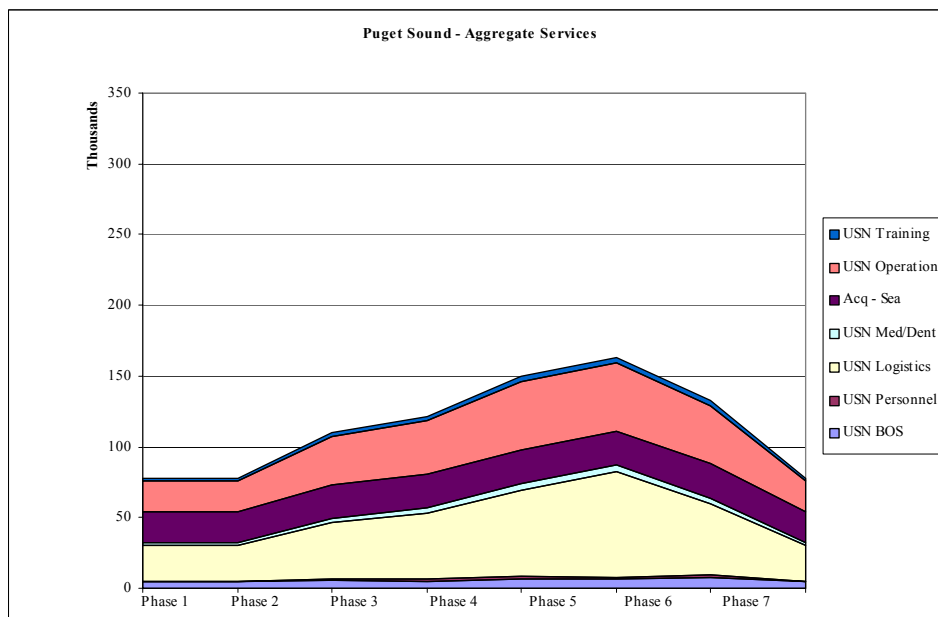
Figure 63. Geographic Stress Profile – Puget Sound
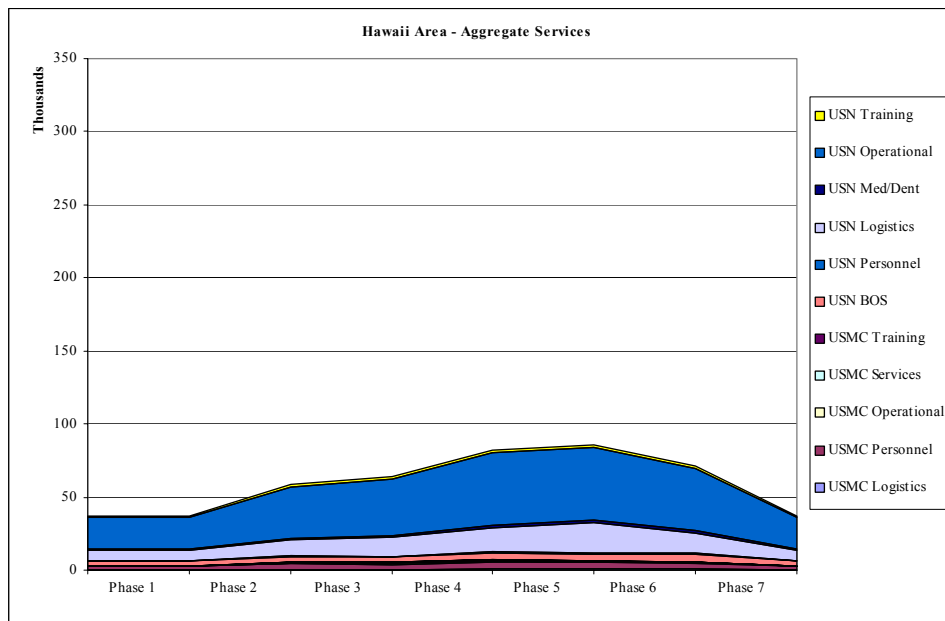
Figure 64. Geographic Stress Profile - Hawaii
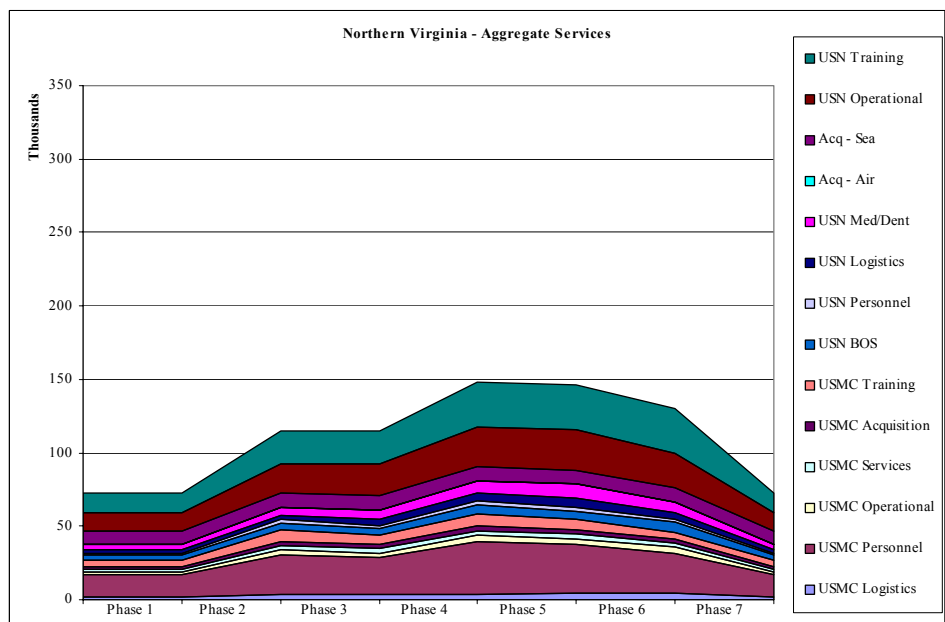
Figure 65. Geographic Stress Profile - National Capital Region

4.4   COMPONENT NETWORK SERVICES

The operational/functional profiles were developed by considering 13 individual component services that represent the most significant of the total list of services to be provided. The relative stress of each of these individual services was recorded and combined by an algorithm to derive the composite operational/functional activity profiles. The algorithm weighed some of the component services more heavily than others; security, help desk, enterprise network management, wide area connectivity, and base area and LAN were weighted double. These same component services were also broken out separately to show their individual profiles and to show their impact when each of the operational/functional activity values were aggregated in a geographical area. The resulting geographical profile for the component service is valuable information for understanding the overall demand for services and for planning for specific services in an area. The component services that are examined include the following:

- Security Services
- Help Desk
- Enterprise Network Management
- Wide Area Network Connectivity
- Base Area and LAN Services
- Video Teleconferencing

Figure 66 through Figure 70 provide graphical representations of these six service profiles for the five geographical areas. The stress impact of selected services becomes very apparent both in steady state and the MTW surge. Stress profiles represent a stacked presentation of operational/functional stresses. The level of stress for each functional layer on the diagram is the product of that user population in the geographic area and their relative stress factors reported across the seven phases of the DRM scenario. The following formula was used to calculate the stress of specific NMCI services for a given geographic location based on user demographics (15 Navy/Marine Corps operational/functional areas):

$$stress_{sp} = \sum_{f=1}^{15} stress_{fsp} \, geopop_f$$

Where $STRESS_{sp}$ = stress for service s for operational tempo phase p;

$GEOPOP_f$ = geographic population of users for operational/functional area f;

$STRESS_{fsp}$ = stress for operational/functional area f for service s and for operational tempo p.
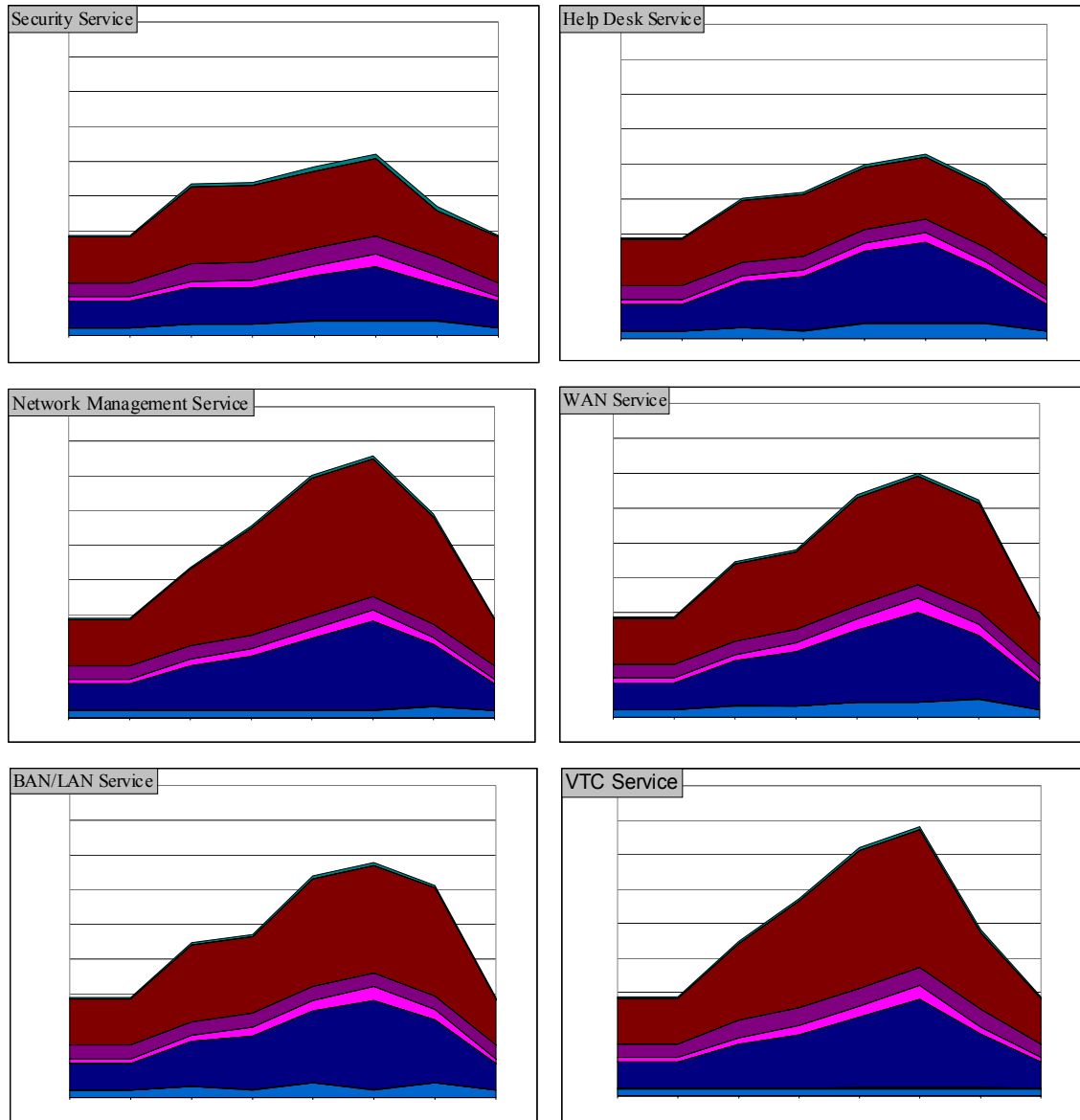
Figure 66. Selected Service Profiles - Hampton Roads

The Hampton Roads area is clearly the highest stress user of NMCI. Steady state use of all six services requires extraordinary response for security, WAN connectivity, and video teleconferencing. The burgundy layer on top is the operational activity and the large blue layer near the bottom is logistics activity. The concentration of activities such as shipyards (accounted for under logistics), along with supply and maintenance activities, account for the logistics activity. These graphs show the relative intensity of change and are drawn to the same scale. The absolute value of the SLIs along the vertical axis is not important. The horizontal axis represents the same seven operational phases.
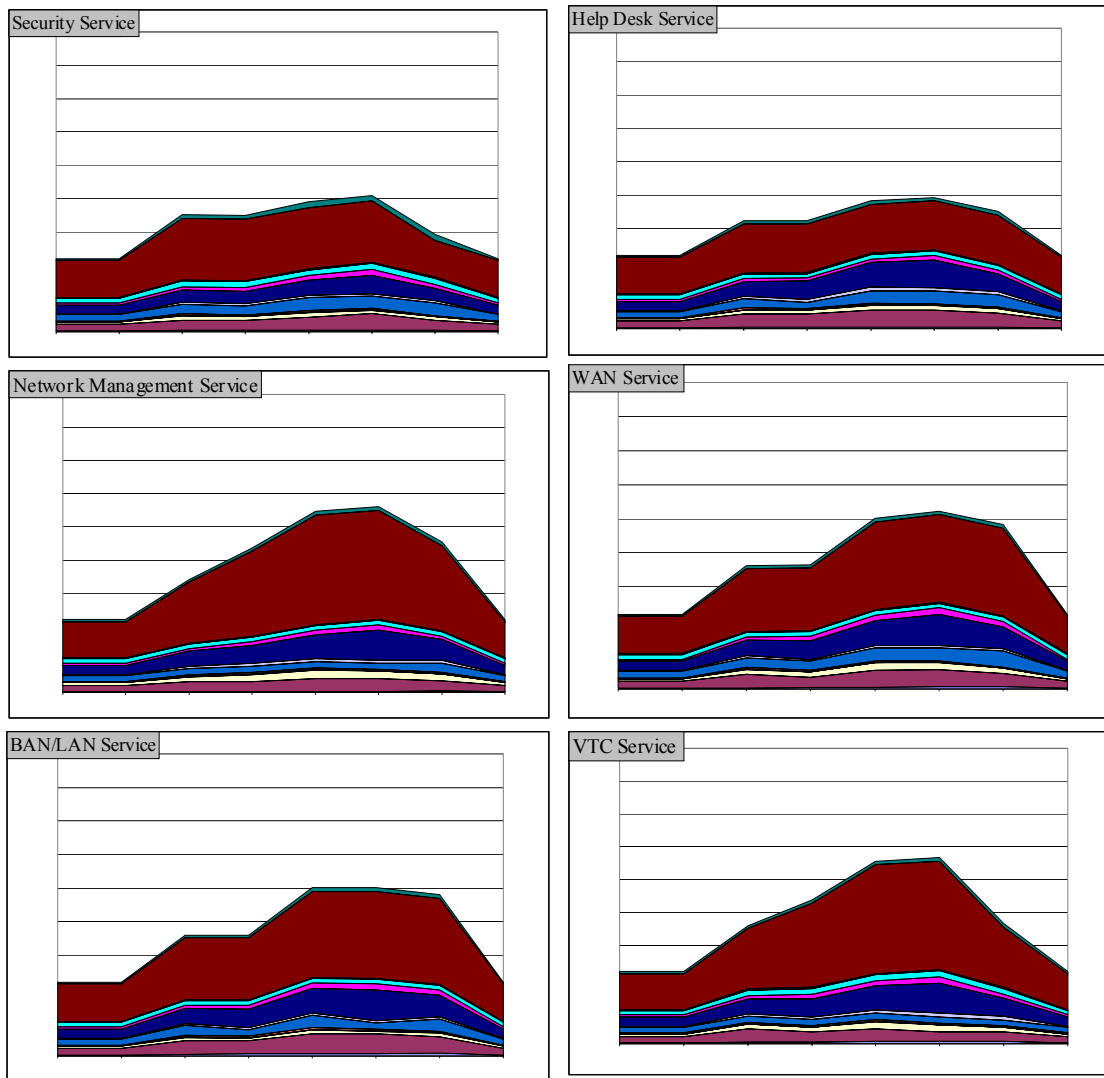
Figure 67. Selected Service Profiles – San Diego/Camp Pendleton

San Diego and Camp Pendleton activity mirrors that of Hampton Roads but is measurably less, in part because of the smaller Naval presence (about 80 percent) in the San Diego area, and in part because of the much lower logistics related services. The noticeable component on each of the service depictions at the bottom layer is the Marine Corps requirement for services at Camp Pendleton. These graphs show the relative intensity of change and are drawn to the same scale. The absolute value of the SLIs along the vertical axis is not important. The horizontal axis represents the same seven operational phases.
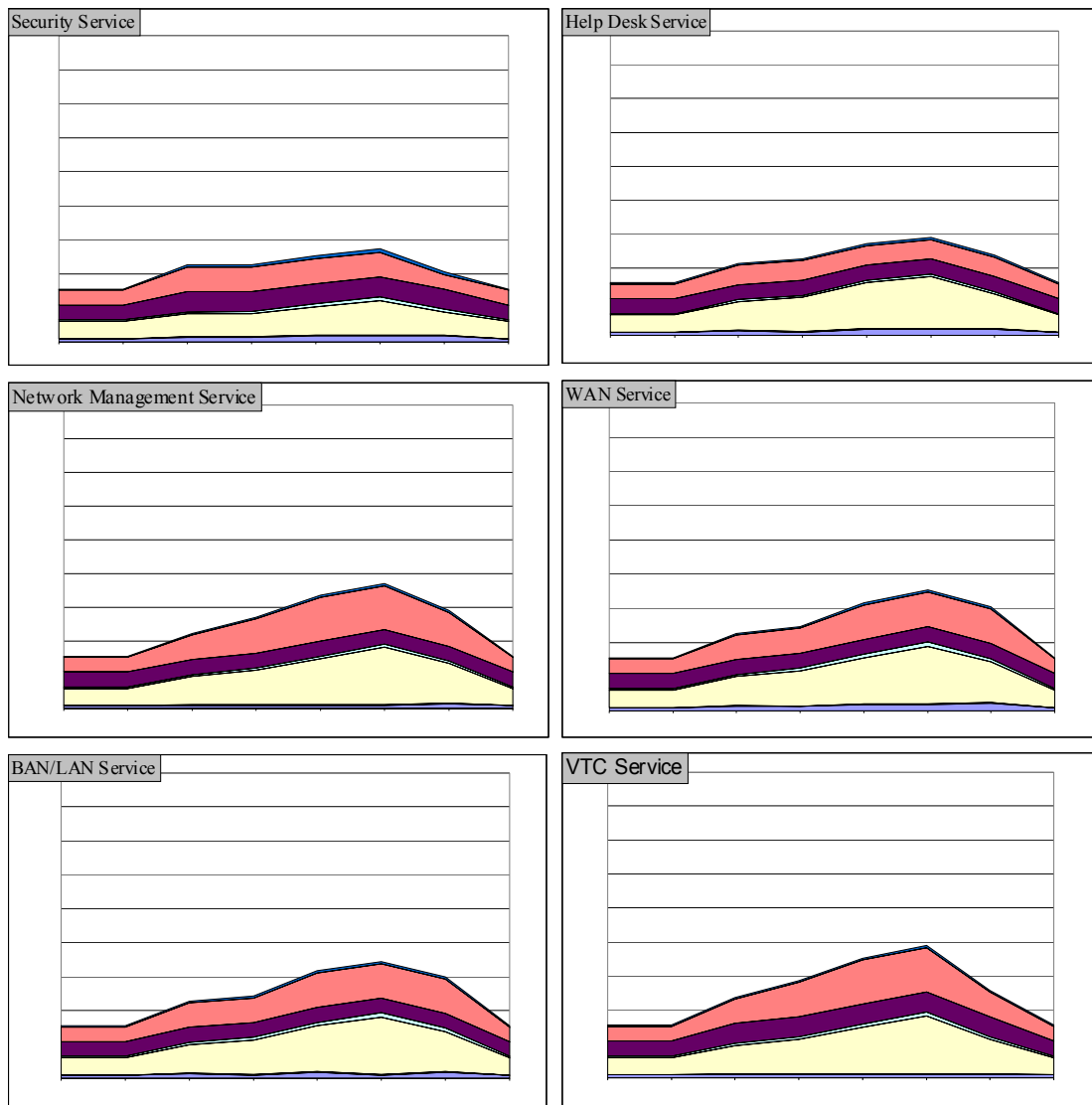
Figure 68. Selected Service Profiles - Puget Sound

The color scheme of the graphics is different than the previous two figures but the story is consistent. The red at the top represents the operational presence and the beige at the bottom is the logistics activity. The burgundy service requirement at steady state and throughout each of the profiles is explained in part by the presence of the largest Naval shipyard at Puget Sound. These graphs show the relative intensity of change and are drawn to the same scale. The absolute value of the SLIs along the vertical axis is not important. The horizontal axis represents the same seven operational phases.
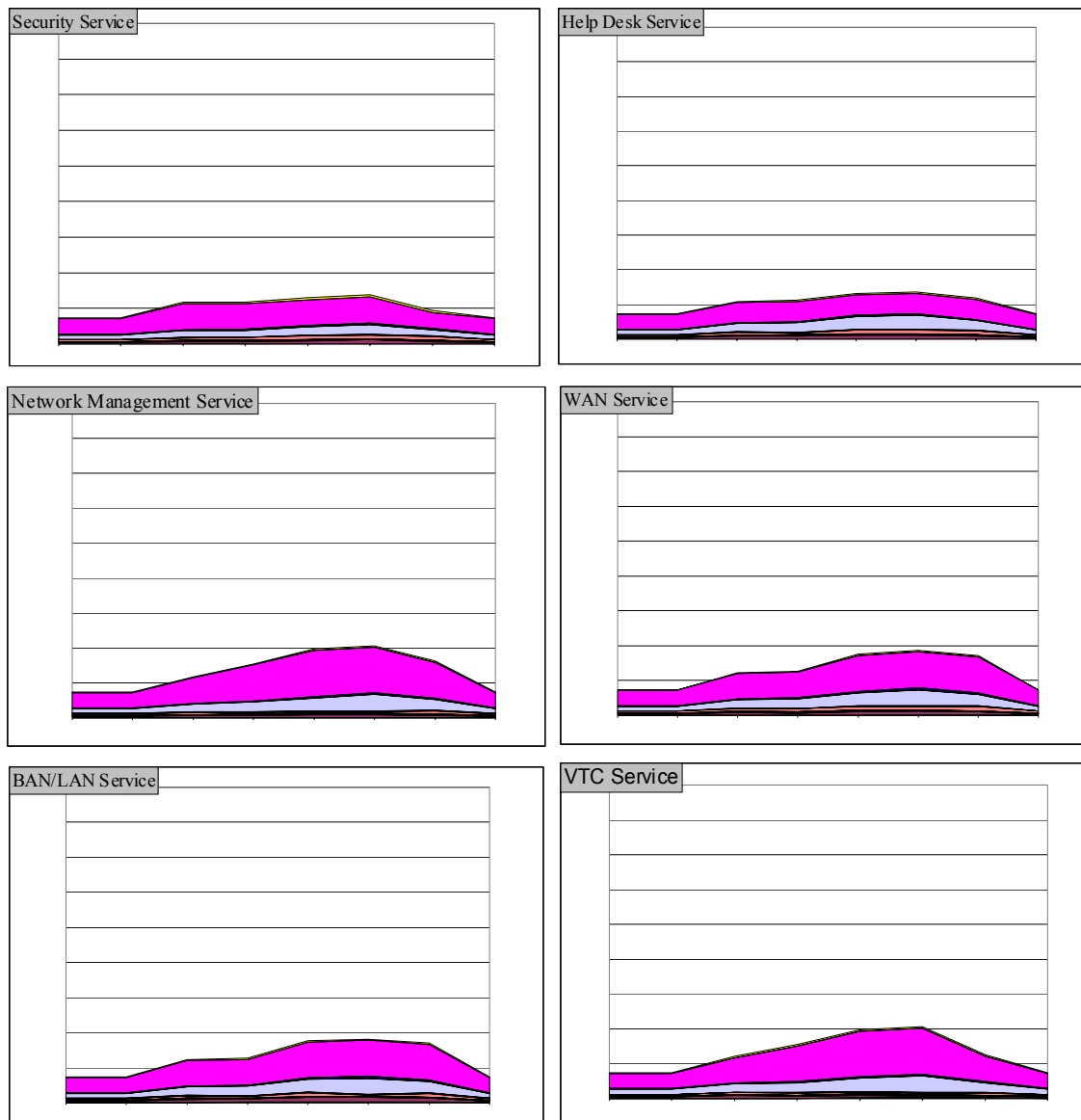
Figure 69. Selected Service Profiles - Hawaii

The NMCI user population in Hawaii is approximately one-fourth of that of Hampton Roads and very operational oriented in function. The top layer is the operational activity, and this approximates that noted at each of the earlier areas observed. The bottom gray layer is logistics. These graphs show the relative intensity of change and are drawn to the same scale. The absolute value of the SLIs along the vertical axis is not important. The horizontal axis represents the same seven operational phases.
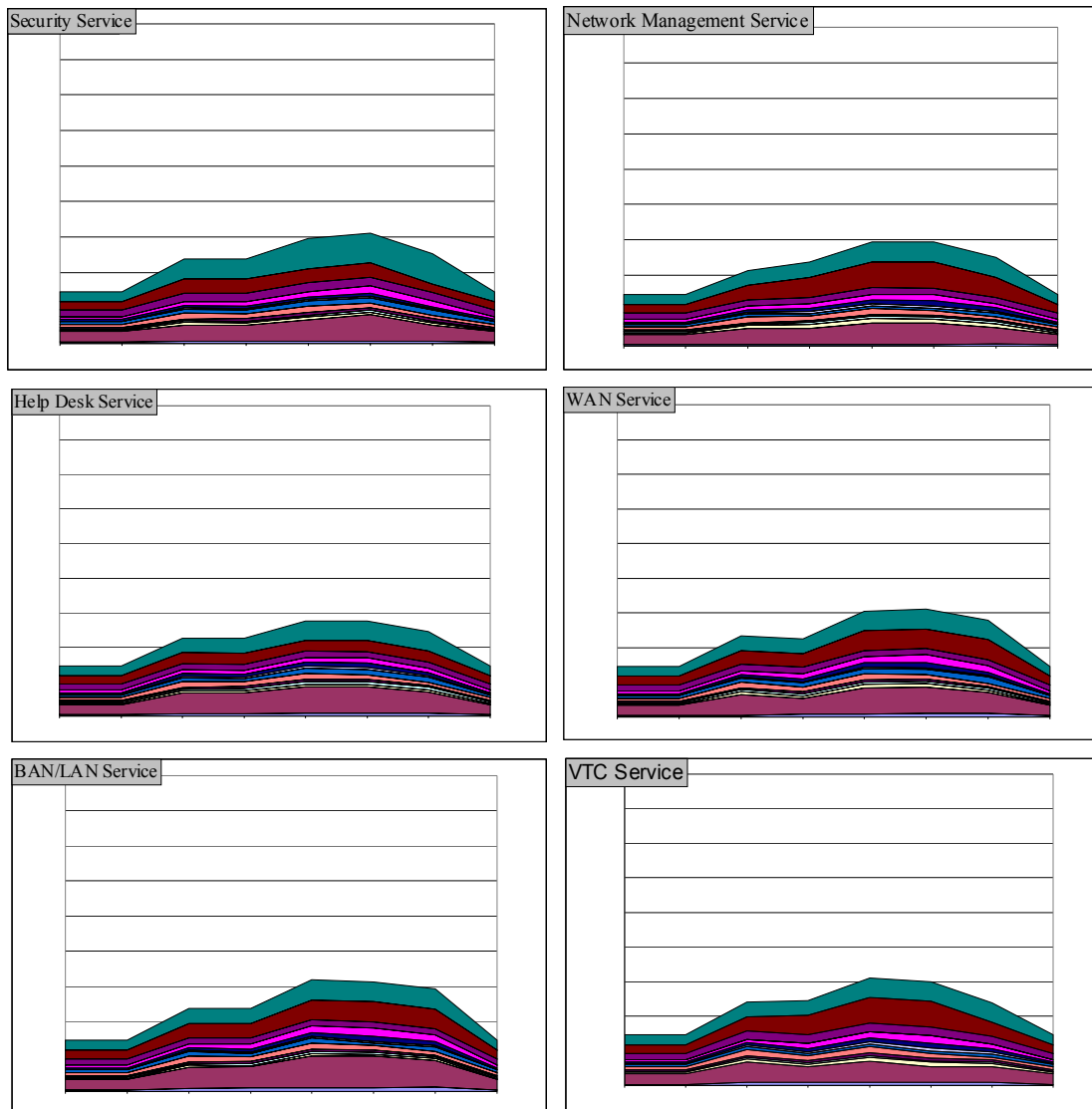
Figure 70. Selected Service Profiles - National Capital Region

The National Capital Region includes the Marine Corps base at Quantico. It does not include outlying sites such as NAS Patuxent River, MD. The activity from steady state through the increase op tempo phases is relatively flat with two notable exceptions, the second burgundy layer (operations) and the bottom purple layer (Marine Corps Base Quantico). These graphs show the relative intensity of change and are drawn to the same scale. The absolute value of the SLIs along the vertical axis is not important. The horizontal axis represents the same seven operational phases.

4.5   SPECIALIZED GEOGRAPHICAL AREAS AND BASES

The five geographical areas just described contain a large percentage of the Navy and Marine Corps user population. There are obviously many other areas and bases that must be understood in order to adequately plan for a CONUS and Hawaii NMCI service. One other significant area addressed in this DRM are those geographical areas and bases that have a single predominant mission, such as T&E, training, supply, and personnel. These are often bases of 2,000 to 4,000 people and are located in nearly every state. The profiles that have been developed offer good insight to the characteristics of these areas/bases.

Acquisition. Acquisition profile includes acquisition, T&E, laboratories, and financial. This area was explained in the earlier section and the functional profile is shown again in Figure 71. With the exception of isolated functions

within NAVSEA and NAVAIR, the profile is relatively flat; exceptions include specialized support functions.
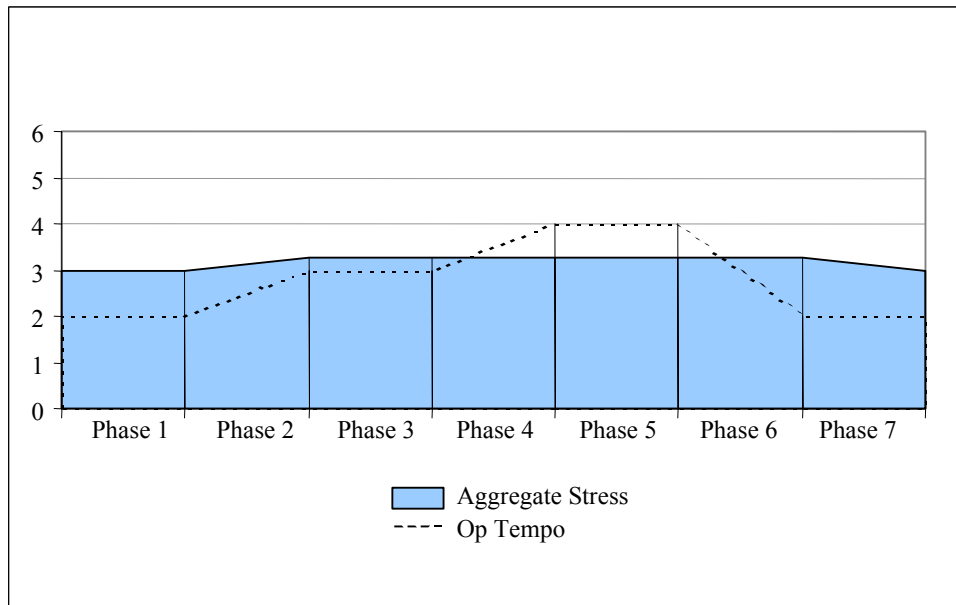
Figure 71. Acquisition Areas and Bases

The most notable examples of this are NAS Patuxent River MD, NAVAIR–Weapons Division China Lake CA, and DTRC Carderock MD. There is a long list of other areas and bases that are explained by this aggregate profile along with its individual service profiles. A partial listing is as follows: NSWC Dahlgren VA, NSWC Panama City FL, NSWC Crane IN, NWS Seal Beach CA, NWS Charleston SC, NS Point Mugu CA, NS Lakehurst NJ, NS Orlando FL

Training. The Training profile is applicable to not only large bases such as NAS Pensacola FL and 29 Palms CA, but others such as Recruit Training Center in Great Lakes.

Personnel. The Manpower and Personnel profile can be used to describe the significant Navy Bureau of Personnel presence in both Millington TN and New Orleans LA.

Logistics. The Logistics profile can be used to explain the expected user requirements of the Marine Corps Materiel Command in Albany GA, its companion base in Barstow CA, and the Navy presence in Philadelphia PA and Mechanicsburg PA.

4.6   PERFORMANCE MEASURES

The information provided in each of the operational/functional areas regarding Specific IT Support addressed the specific manner in which the NMCI should support the respective missions. The intent was to describe the relative importance of elements of the IT support to ensure that the resultant NMCI solution adequately addresses those priorities. The manner in which these priorities are measured will ultimately reflect what receives the emphasis and attention of the NMCI implementers. The eventual MOEs which are derived in part from the performance measures are therefore critical to NMCI meeting user representative priorities and requirements.

Performance Measures	Number of Occurrence
High reliability	5
High degree of security	6
Robust network	4
Connectivity to partners	3
Ease of access	3

Table 67 Summary of Operational/Functional Performance Measures

A summary of most notable performance measures is presented in Table 67. The table shows those measures that were emphasized by more than one service element. The service representatives also offered recommendations for the corresponding MOEs.

- For Reliability, recommendations included number of network points of failure, availability, mean time to restore.

- For Security, recommendations included intrusion detection, attack blocking, protection of blood supply data, and time to respond to restore integrity of the system.

- For network robustness, recommendations were time for remote application processing, file downloads, and timely email/DMS transmission.

These MOEs were given fairly consistent priorities by the operational/functional activities. Therfore, they were viewed as significant given the independent development of the MOE recommendations.

4.7 COMMON FUNCTIONALITY

This separate section defines common Navy and Marine Corps IT functions that should specifically be part of the NMCI. The DRM strategy was to define the user mission environment and the general operating envelopes that the NMCI solution should support – thereby leaving to the service provider the ability to use best practices, new technology, innovation, and cost avoidance. The functions presented, address those characteristics or conditions that are common in all phases of the Navy and Marine Corps operational/functional mission performance. Those things that qualify as common functions tend to be interfaces or conditions that are external to the NMCI that should be addressed. Examples include interfaces to the operational forces, to contractors, and to other military Services.

4.7.1 Security Services

IA in compliance with current DoD, DoN, USMC, and OPNAV directives, orders and instructions is critcal to the performance of NMCI. This functionality provides a level of protection to DoN systems and information that ensures NMCI services meet, or exceed the security requirements discussed in chapter 1.6.

4.7.2 Wide Areas Network Access

The NMCI should provide its customer base with Wide Area Network connectivity required to effect mission accomplishment of the individual NMCI customer. This connectivity includes, but is not limited to, access to the Secure IP Router Network (SIPRNET), the Non-secure IP Router Network (NIPRNET), the Defense Research Engineering Network (DREN), the DSN, and the Internet. Connectivity from the individual customer to the supporting wide area network should be sufficient to support the customer's mission requirements by enabling existing and emerging Navy, Marine Corps, DoN, and Joint applications to function within design parameters.

4.7.3 Infrastructure

The NMCI should provide the infrastructure necessary (hardware, software, cable plant, support personnel, data stores) to provide basic, and where requested, optional NMCI services to all customers within the DoN as discussed in chapter 1. The term "customers" includes, but is not limited to all military members (active and reserve), Marine Corps and Navy civilians, and contractors working at government facilities. This infrastructure should be able to support expansion of the customer base, addition of optional service for existing customer, or relocation of existing

customers. To state this a different way, the contractor should provide sufficient capacity to meet current customer requirements as well as emerging requirements while maintaining sufficient reserve capacity to responsively address surge on demand.

4.7.4   Joint and Industry

Network Interoperability. NMCI infrastructure and services should be designed, installed, operated, and maintained in accordance with published Joint standards for IT as contained in the DII COE, the Joint Technical Architecture. The NMCI should provide voice, video, and data service necessary to enable seamless connectivity and interoperability among NMCI customers, their applications and data stores in such a way that supports the individual customer's mission, and supports both existing and emerging Navy, Marine Corps, DoN, and Joint applications. Seamless connectivity and interoperability among NMCI customers includes the ability to support information exchange between customers in the ashore/garrison CONUS environment, and that portion of the customer base that may be stationed aboard OCONUS facilities or forward deployed, either aboard ship or in a land based, tactical environment. Further, NMCI should provide seamless connectivity and interoperability between the NMCI customers, their applications and data stores, and external customers, including the DoD, other Government agencies, and non-governmental agencies and individuals. The NMCI shold be designed and maintained as an integral component of the emerging DoD Global Information Grid (GIG).

4.7.5   Pier Services

NMCI should provide connectivity to the pier head distribution point, the Fleet NOC and Joint Forces Tactical Operations Center (JFTOC). This connection should enable distribution of messaging from the shore component to the Navy/Marine Corps Fleet and OCONUS component, both pier side deployed, through the NCTAMS and STEP Site distribution network. It should also support reach back of pier side and afloat/OCONUS components to the shore/garrison information repositories. Basic services for the pier side and afloat/deployed units and for OCONUS units will be provided by the Base Level Infrastructure Improvement (BLII) and IT-21 programs.

4.7.6   Navy/Marine Corps Operational Direction

NMCI network management policies, procedures and tools should enable the Navy and the Marine Corps to exercise operational direction over the critical segments of the infrastructure in support of the services Title 10 and warfighting responsibilities. Operational direction includes, but is not limited to, the ability to rapidly execute reallocation of resources (bandwidth, support personnel, processing power) and to set priorities of effort for contractor work. Additionally, the NMCI should provide a mechanism to allow the government to rapidly effect critical engineering changes in support of changing operational requirements, or at the direction of commanders exercising command authority over one or more segments of the NMCI customer base. This includes the ability of the individual services to segment their networks, either in total, or at the base enclave level and below, from the rest of NMCI and from other external networks.

4.7.7   Responsive Support for Deploying Forces

NMCI should enable segments of the NMCI customer base to rapidly prepare for deployment from the ashore/garrison environment, disconnect from that environment, relocate to a remote location, and rapidly reestablish connectivity to NMCI either directly or through a variety of DoD and commercial wide area network infrastructures. Once reestablished, connectivity with the NMCI infrastructure must support interoperability as described in paragraph b., above. Remote locations include, but are not limited to, other CONUS ashore/garrison locations, CONUS land-based tactical environments, OCONUS ashore/garrison locations, forward deployed shipboard environments, and OCONUS land-based tactical environments.

4.7.8   Uninterrupted Operations During NMCI Transition

The contractor should not negatively impact Navy or Marine Corps business processes or functions during the period of transition from current state to the NMCI end-state. This includes sustained support for existing Navy/Marine Corps network management and network security activities; and Navy/Marine Corps customer activities, supporting IT systems, and data stores.

4.7.9   Resource Scalability

NMCI should ensure resources are available to respond to periods of increased operational tempo. This DRM

provides a sense for the most significant areas where scalability might be required. Contractor performance should ensure continuation of service within established MOE parameters during periods of increased operational tempo.

4.7.10 Support for Emerging Navy and Marine Corps Operational Concepts

NMCI infrastructure management processes, policies and procedures should support evolutionary and revolutionary changes in Navy and Marine Corps operational concepts. The business of warfare is constantly evolving in response to changing threats and emerging technologies. Management of the NMCI architecture and associated infrastructure must take this dynamic into account and allow for an evolution of this infrastructure that continues to support the warfighting concepts of the Naval services.

4.7.11 Support for Business Process Reengineering

NMCI infrastructure management processes, policies and procedures must support the business process reengineering efforts of the DoN, the Navy, and the Marine Corps. Collaborative efforts between appropriate government and NMCI contractor representatives will be required during BPR efforts in order to design and implement appropriate technology changes to increase the efficiency and effectiveness of DoN business processes.

4.8   DESKTOP PRACTICES

This section provides a more definitive link between daily work practices and desktop services provided. To understand, the integrated picture, it is necessary to delve into processes that rely strongly upon the technology. DoN is undergoing a period of change during which time, successful mission accomplishment depends upon enhanced personal productivity. As the Navy Shore Establishment reduces manning and consolidates functions within regions (or across the enterprise) there is a significant increase in the tasks assigned to a smaller core group of individuals.   Broad functional responsibilities, which relied upon multiple workgroups within a small geographic area, are being spread across large geographic areas (or across the enterprise). This requires a greatly enhanced and reliable communications infrastructure for voice, video and data.

Past business practices relied upon voice communications, facsimile, meetings and conferences. The NMCI Navy will be driven by collaborative efforts with teams spread across the globe. Time zones, distance and the International Date Line will no longer restrict us. Data will be gathered at the source and facts and figures will be merged into information available to all users.   This information will be placed into corporate information warehouses accessible from any NMCI seat. Future budget and operational projections; long range planning and corporate strategies will be based upon modeling and simulation vice guess and speculation.

4.8.1   Corporate Day – Nov 1999

Throughout the Navy, information workers arrive at work, sit at their workstation and either log into their LAN or operate stand-alone. The majority of these activities have intermittent access to the NIPRNET and the World Wide Web. Less than 20% of our activities have dedicated access to classified networks such as SIPRNET or JWICS. An information worker's time is consumed by a recurring sequence of meetings, phone calls, email, review of message traffic and an occasional video teleconference. All of these events are attempts (frequently unsuccessful) to gather raw data and make decisions based upon incomplete information, conjecture and assumptions. The frequency with which we properly respond to a task and develop or execute our strategic plans is directly related to the high quality of our personnel vice the result of information/knowledge management.

4.8.2   Corporate Day – Nov 2001

Workers throughout the Navy and Marine Corps, arrive at work, log onto their workstation and join the naval global data network. This network will provide access to the information required for an individual to perform his or her information or knowledge related task.   The desktop presented to our workers remains constant whether the user is operating globally or accessing information resident in his or her data store. Each seat relies upon an advanced global network access tool (next generation browser) which is constant across the enterprise yet is customized to support many of the users specific business practices. Every device on the enterprise network can be authorized to access the full range of services and data bases specific to the users domain (i.e., a user in an unclassified domain cannot access secret information in a classified domain. A classified domain user can access all data within his/her domain and all data resident in less restrictive domains.). Travelers can sit at any seat within the corporate Intranet

and gain access to critical information and knowledge. The actual data location loses its importance or identity and the user's effectiveness is not reduced by travel or by working from his or her home.

The desktop environment provided to the Shore Establishment should share common roots with the IT-21 networks installed aboard ship. The desktop has a similar look and feel and general administrative applications (e.g. office automation applications) operate in the same way whether afloat or ashore. The actual applications (tools) might be different but the environment they support and the way in which they are used is consistent across the enterprise.

Our common desktop provides ready access to computer based training on a myriad of topics. The costs associated with frequent travel to schools commands are significantly reduced as workers are presented with the additional knowledge or guidance required in the performance of their jobs based upon observed or recorded network activities. Training is context sensitive, allowing users to acquire the knowledge required for job performance as a natural extension of his or her desktop. Productivity is not impaired by lack of training.

The common desktop provides a repository for information vice breaking up our work processes into separate media or means of communications. Email, graphics with voice annotation; video film clips; animated sequences; data queries, macros used to execute specific actions, etc., are available on the desktop in areas that best service the needs of the user. There is no requirement to interrupt thought processes to drop into discrete applications such as email or televideo.

Corporate warehouses become part of the desktop. NMCI fosters data links and integration between separate functional warehouses so the end user sees a singe data repository allowing extrapolation or analysis across dissimilar data structures. Analysis is not bounded by discrete databases. Shadow processes map common elements where data dictionaries and date element descriptions have not been standardized.

Meetings occur in virtual space with attendees able to attend in person; participate from a video conference room; or join using desktop video. Severe bandwidth constraints are broken allowing free and open interchange of collaborative services; data and information between all participants. The meeting or session can be recorded for playback including all information transfers. The meetings become self-documenting and the same participants can be reconnected for follow-up automatically (e.g. IP's, router configurations; video switches, etc., are recorded with the session and can be reconnected upon demand.)

Applicable records of meetings and rational for decisions are automatically transferred in accordance with pre described logic statements to the central Naval document and decision repository. This same database is searchable and information stored there (voice, video, data) is transferable in real time to the requestor.

It is important that the system keep up with technology and that there is freedom to experiment in order to better manage information, to create knowledge superiority and to radically modify current processes. Some method must be achieved to facilitate and encourage this experimentation in pockets on the network. As better technologies and processes are thus created there must be a mechanism for transforming them into enterprise applications and procedures.

4.8.3   Quality of Service

Key to NMCI is the Quality of Service (QOS) received. If a user experiences extended delays, inconsistencies, system induced limitations or communication problems; system utility will be greatly diminished. The key to success is providing a tool that simplifies and improves the way in which we do business. If the user has to constantly fight with the environment; if use is not seamless; or if the system does not fit the way we do business; it will not foster process improvement.
Characteristics:

- The system should produce a friendly user environment: System wait states (hour glass) for provided applications and for normal browsing should be minimized, it should be better than the best in the Navy today (see Oahu Base area network) and should continue to exceed industry standards. The machine should start up and shut down rapidly. This is especially important for personnel who need access to multiple security domains.
- Data should never be lost, and system down time (planned or unplanned) should never affect the work processes.
- All legacy applications (those not supported by NMCI) should still run over the NMCI network. There should be no need for stand alone systems.

- Moving from one application to another should be rapid and seamless. Decisions regarding location of applications and where they execute should be based upon performance not cost. A warfighters perspective is that effectiveness is more important than efficiency. Many managers have to process information in multiple security domains. The ability to pass critical information between domains must be built into the system. This process should be transparent to the end user.
- Workspace (memory) should be sufficient to support power users. There must be adequate space to support storage of voice, video and data. Storage should not be fixed under the contract. Storage constraints must change as technology changes.
- Office space is restricted. Devices should be sized to allow information and knowledge workers to have more than one domain active in their office. This is particularly important for management personnel.
- Tools such as calendars, schedules and certain collaborative applications should be integrated across the enterprise. [E.g. any desktop should have the ability to schedule conferences or teleconferences and verify key personnel's availability throughout NMCI.].

APPENDIX A ACRONYMS

AC	Active Component
ACE	Aviation Combat Element
ACS	Annual Course Scheduler
ADL	Advanced Distributed Learning
ADP	Automated Data Processing
A_O	Availability
AOR	Areas Of Responsibility
ARG	Amphibious Readiness Group
ASN	Assistant Secretary of the Navy
ATIS	Advanced Technical Information Support System
ATLASS	Asset Tracking for Logistics and Supply System
ATO	Air Tasking Orders
BAN	Base Area Network
BG	Battle Group
BNA	By Name Assignment
BOS	Base Operating Support
BUPERS	Bureau of Naval Personnel
C	Network Capacity
C3I	Command, Control, Communication, Intelligence
C4ISR	Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance
CAEMS	Computer Aided Embarkation Management System
CAIMS	Conventional Ammunition Information Management System
CALM	Computer Aided Load Manifest
CBT	Computer Based Training
CCAD	Corpus Christi Army Depot
CE	Command Element
CEDAD	Computer Enhanced Detailing and Distribution
CEIS	Corporate Executive Information System
CG	Cruiser
CHCS	Composite Healthcare System
CIA	Central Intelligence Agency
CINC	Commander in Chief
CJCS	Chairman, Joint Chiefs of Staff
CMC	
CNATRA	Chief of Naval Air Training
CND	Computer Network Defense
CNET	Chief of Naval Education and Training
CNO	Chief of Naval Operations
CNRC	Commander, Navy Recruiting Command
COMMARFORLANT	Commander, Marine Forces, Atlantic
COMMARFORPAC	Commander, Marine Forces, Pacific
COMMARFORRES	Commander, Marine Forces Reserve
COMNAVSECGRU	Commander, Naval Security Group
CONUS	Continental United States
CONOPS	Concept Of Operations
COP	Common Operational Picture
COTS	Commercial Off-The-Shelf
CSSE	Combat Service Support Element
CTAPS	Contingency Theater Automated Planning Systems
CV	Carrier
DCNO	Deputy Chief of Naval Operations

DD21	21st Century Destroyer	
DES	Data Encryption Standard	
DFAS	Defense Finance and Accounting Service	
DISA	Defense Information Security Agency	
DISN	Defense Information Switch Network	
DITSCAP	DoD Information Technology Security Certification & Accreditation Process	
DJMS-AC/RC	Defense Joint Military Pay System-Active Component/Reserve Component	
DLA	Defense Logistics Agency	
DMC	Defense Mega Center	
DMRS	Diary Message Reporting System	
DMS	Defense Message System	
DNS	Domain Name Services	
DoD	Department of Defense	
DoN	Department of the Navy	
DOS	Disk Operating System	
DOTES	Doctrine, Organization, Training, Equipment, and Support	
DRM	Design Reference Manual	
DS	Directory Services	
DSN	Defense Switched Network	
EAIS/OAIS	Enlisted and Officer Assignment Information System	
EDI	Electronic Data Interchange	
EFT	Electronic File Transfer	
EKMS	Electronic Key Management System	
EPMAC	Enlisted Personnel Management and Accounting Center	
EWTGs	Expeditionary Warfare Training Groups	
EXW	Expeditionary Warfare	
FAST	Fleet Antiterrorism Security Team	
FS	Functional Skills	
FSSG	Force Service Support Group	
GCCS	Global Command and Control System	
GCCS-M	Global Command and Control System-Maritime	
GCE	Ground Combat Element	
GCSS	Global Combat Support System	
GENSER	General Service	
GIG	Global Information Grid	
HQMC	Headquarters, Marine Corps	
IA	Information Assurance	
ICW	Interactive Course Ware	
IDS	Intrusion Detection Systems	
IMAPMIS	Inactive Manpower and Personnel Management System	
IMOSS	Interim Mobile Operations Surveillance Sensor	
INFOCON	Information Operations Condition	
INTRPD	Integrated Navy Training Requirements and Planning Database	
IP	Internet Protocol	
IR	Infra-Red	
IRR	Integrated Radio Room	
ISEA	In-Service Engineering Activity	
ISAR	Inverse Synthetic Aperture Radar	
ISNS	Integrated Shipboard Network System	
ISSAs	Interservice Support Agreements	
IT-21	Information Technology for the 21st Century	
IT	Information Technology	
IW	Information Warfare	

JCALS	Joint Computer-aided Acquisition & Logistics Support
JEDMICS	Joint Engineering Data Management Information and Control System
JFTOC	Joint Forces Tactical Operations Center
JIC	Joint Intelligence Center
JOPES	Joint Operation Planning and Execution System
JTF	Joint Task Force
LAN	Local Area Network
LOGAIS	Logistics Automated Information System
MARCORSYSCOM	Marine Corps System Command
M&RA	Manpower and Reserve Affairs
MAGTF	Marine Air Ground Task Force
MALS	Marine Air Logistics System
MAN	Metropolitan Area Network
MAPMIS	Manpower and Personnel Management Information System
MAST	Mobile Ashore Support Terminals
MATCOM	Material Command
MCAIMS	Marine Corps Automated Information Management System
MCARMS	Marine Corps Ammunition Requirements Management System
MCCDC	Marine Corps Combat Development Command
MCMODS	Marine Corps Manpower Operational Data Store
MCI	Marine Corps Institute
MCIAIS	Marine Corps Institute Automated Information System
MCOTEA	Marine Corps Operational Test and Evaluation Activity
MCSF	Marine Corps Security Forces
MCTFS	Marine Corps Total Force System
MDSS	MAGTF Deployment Support System II
MEF	Marine Expeditionary Force
MEPCOM	Military Entrance Processing Command
MEPS	Military Entrance Processing Sites
METOC	Meteorology and Oceanography Command
MEU	Marine Expeditionary Unit
MICFAC	Mobile Integrated Command Facilities
MIDDS	METOC Integrated Data Display System
MIW	Mine Warfare
MOE	Measure of Effectiveness
MOJT	Managed-on-the-job training
MPF	Maritime Prepositioning Forces
MPT	Manpower and Personnel Training Information Systems
MPS	Maritime Pre-Positioned Ships
MRMS	Maintenance Resource Management System
MSTP	MAGTF Staff Training Program
MTW	Major Theater of War
MUMMS	Material Unified Movement Management System
NMCI	Navy/Marine Corps Intranet
NADEPS	Naval Aviation Depots
NALCOMIS	Naval Aviation Logistics Command Management Information System
NALDA	Naval Aviation Logistics Data Analysis
NAS	Naval Air Station
NAVAIRSYSCOM	Naval Air System Command
NAVCRUITCOM	Naval Recruit Command
NAVEDTRACOM	Naval Education and Training Command
NAVICP	Naval Inventory Control Point
NAVMAC	Naval Material Command

NAVMANPAC	Navy Manpower Accounting Center
NAVPERS	Naval Personnel System
NAVSEA	Naval Sea Systems Command
NAWC	Naval Air Warfare Center
NCMIS	Navy Campus Management Information System
NCTAMS	Naval Computer and Telecommunications Area Master Stations
NES	Navy Enlisted System
NETC	Naval Education and Training Center
NETPDTC	Naval Education and Training Professional Development and Technology Center
NIPRNET	N-level Internet Protocol Router Network
NITES	Navy Integrated Tactical Environmental Subsystem
NITRAS	Navy Integrated Training Resources Administration System
NJROTC	Naval Junior Reserve Officer Training Corps
NJUMS	Navy Junior Unit Management System
NMPDS	Navy Military Personnel Distribution System
NMPS	Navy Mobilization Processing Sites
NOC	Network Operations Center
NPC	Navy Personnel Command
NPS	Non-Prior Service
NROTC	Naval Reserve Officer Training Corps
NRPC	Naval Reserve Personnel Center
NSA	National Security Agency
NSIPS	Navy Standard Integrated Personnel System
NSWC	Naval Surface Warfare Center
NTCSS	Naval Tactical Command Support System
NTMPS	Navy Training Management and Planning System
NTQMS	Navy Training and Quota Management System
NTRS	Navy Training Reservation System
NUWC	Naval Undersea Warfare Center
OAIS	Officer Assignment Information System
OBU	OSIS Baseline Upgrade
OED	OSIS Baseline Upgrade Evolutionary Development
ONI	Office of Naval Intelligence
OMPFs	Official Military Personnel Files
OPINS	Officer Personnel Information System
OPMIS	Officer Programs Management Information System
OPORDERS	Operational Orders
OPTASKS	Operational Tasks
OSD	Office of the Secretary of Defense
OSIS	Ocean Surveillance Information System
PACE	Program for Afloat College Education
PAO	Public Affairs Officer
PASS	Pay Administrative Support System
PC	Personal Computer
PEO	Program Executive Officer
PERSNET	Personnel Net
PES	Performance Evaluation System
PKI	Public Key Infrastructure
PRIDE	Personalized Recruiting for Immediate and Delayed Enlistment
QOS	Quality of Service
RAS	Remote Access Server
RC	Reserve Component
RD&A	Research, Development and Acquisition

RESFOR	Naval Reserve Force
RF	Radio Frequency
RFP	Request For Proposal
RHS	Reserve Headquarters System
ROLMS	Retail Ordnance Logistics Management System
RSTARS	Reserve Standard Training, Administrative and Reporting System
RTA	Remote Telephone Access
SATCOM	Satellite Communication
SASSY	Supported Activities Supply System
SC	Surface Combatants
SCI	Sensitive Compartmented Information
SDS	Source Data System
SELRES	Navy Selected Reservists
SIPRNET	Secret Internet Protocol Routing Network
SLI	Service Level Indicators
SNAP	Shipboard Non-Tactical ADP Program
SPMAGTF	Special Purpose MAGTF
SSA	Software Support Activity
STASS	Standard Training Activity Support System
STEP	Standard Tactical Entry Points
STU	Secure Telephone Unit
TA	Tuition Assistance
T&E	Test and Evaluation
TACAMO	"Take Charge And Move Out"
TAMPS	Tactical Air Mission Planning System
TBMCS	Theater Battle Management Core Systems
TCAIMS	Transportation Coordinators Automated Information for Movement System
TC-AIMS	Transportation Control Automated Information Management System
TCP/IP	Transmission Control Protocol/Internet Protocol
TFMMS	Total Force Manpower Management System
TOURS	Training Oriented Users Resource Scheduling
TPFDD	Time Phased Force and Deployment Data
TRMMS	Training Resource Requirements System
TRRCS	Training Requirements Resource Control System
TSC	Tactical Support Centers
UIC	Unit Identification Code
UICP	Uniform Inventory Control Point
UMIDS	Uniformed Micro Integrated Disbursing System
USN	United States Navy
USNR	United States Naval Reserve
USW	Undersea Warfare
VOD	Voice on Demand
VPN	Virtual Private Network
VTC	Video Tele- Conference
VTU	Voluntary Training Unit
WAN	Wide Area Network
WHNS	Wartime Host Nation Support

APPENDIX B MARINE CORPS RESERVES UNITS

State	City	Seats	Reserve Unit
Alabama	Bessemer	25	4th Battalion, 14th Marines
	Huntsville	10	Battery K, 4th Battalion, 14th Marines
	Mobile	10	4th Sensors Control and Management Platoon (SCAMP)
		10	3rd Force Reconnaissance Company
	Montgomery	10	Company L, 3rd Battalion, 23rd Marines
Alaska	Anchorage	10	Company E, 4th Reconnaissance Battalion
Arizona	Phoenix	10	Bulk Fuel Company D, 6th Engineer Support Battalion
	Tucson	10	Bulk Fuel Company A, 6th Engineer Support Battalion
	Yuma	300	Marine Fighter Training Squadron 401 (VMFT-401), Marine Aircraft Group 46
Arkansas	North Little Rock	10	Company I, 3rd Battalion, 23rd Marines
California	Alameda	45	1st Battalion, 14th Marines
			30th Interrogator - Translator Team
			Headquarters Battery, 1st Battalion, 14th Marines
	Bakersfield	10	3rd and 4th Platoons, Bulk Fuel Company B, 6th Engineer Support Battalion
	Camp Pendleton	300	Marine Light Attack Helicopter Squadron 775 (-) (HMLA-775), Marine Aircraft Group 46
			Headquarters, 4th Light Armored Reconnaissance Battalion
			31st Interrogator - Translator Team
			Detachment A, Marine Aircraft Group 46
			Camp Pendleton, Reserve Support Unit
			Company A, 4th Light Armored Reconnaissance Battalion
			4th FSSG Forward (Nucleus), West, Headquarters and Service Battalion
			Marine Expeditionary Force Augmentation CE (I MACE), Pacific
			Light Armored Vehicle - Air Defense Platoon (LAV-AD), 4th Light Armored Reconnaissance Battalion
			3rd Civil Affairs Group
	Concord	10	2nd and 3rd Longshoreman Platoons (Rein), 1st BTO Company, 4th LSB
	Edwards AFB	200	Marine Medium Helicopter Squadron 764 (HMM-764), Marine Aircraft Group 46
			Marine Heavy Helicopter Squadron 769 (HMH-769), Marine Aircraft Group 46
	El Toro	200	Detachment B, Marine Aircraft Group 46
			Marine Wing Support Squadron 473, Detachment A, Marine Wing Support Group 47
	Encino	10	Headquarters and Service Company, 2nd Battalion, 23rd Marines
			2nd Battalion, 23rd Marines
	Lathrop	10	Company B (Rein), 4th Landing Support Battalion
	Long Beach	10	3rd Air Naval Gunfire Liaison Company (3rd ANGLICO)
		10	Air/Naval Gunfire Platoon, Communications Company (-), Headquarters Battalion
	Los Alamitos	10	Company G, 2nd Battalion, 23rd Marines
	Miramar	10	MCAS Miramar, COMCABWEST, Reserve Support Unit
	Pasadena	10	Headquarters and Service Battery (-), 4th LAAD Bn, Marine Air Control Group 48
		10	Battery A, 4th Low Altitude Air Defense Battalion, Marine Air Control Group 48
		10	Headquarters, 4th Low Altitude Air Defense Battalion, Marine Air Control Group 48
	Pico Rivera	10	Battery B, 1st Battalion, 14th Marines
	Port Hueneme	10	Weapons Company, 2nd Battalion, 23rd Marines
	Riverside	10	Company D, 4th Tank Battalion
	Sacramento	10	Motor Transport Maintenance Company, 4th Maintenance Battalion
	San Bruno	10	San Bruno, California 94066-0095
	San Diego	300	Detachment, Medical Logistics Company, 4th Supply Battalion
			14th Counter Intelligence Team
			Headquarters, 4th Medical Battalion
			Marine Fighter Attack Squadron 134 (VMFA-134), Marine Aircraft Group 46
			Headquarters, Marine Wing Support Squadron 473, Marine Wing Support Group 47
			Marine Wing Communications Squadron 48, Detachment A (Forward), MACG 48
			Headquarters, 4th Tank Battalion

State	City	Seats	Reserve Unit
			Headquarters, Marine Aircraft Group 46
			Marine Air Support Squadron 6, Detachment A, Marine Air Control Group 48
			Headquarters and Service Company, 4th Medical Battalion
			Surgical Support Company A, 4th Medical Battalion
			Headquarters and Service Company, 4th Tank Battalion
	San Jose	10	1st Longshoreman Platoon, 1st Beach and Terminal Operations Company, 4th LSB
	Seal Beach	45	5th Battalion, 14th Marines
			Battery O, 5th Battalion, 14th Marines
			Headquarters Battery, 5th Battalion, 14th Marines
	Twenty-nine Palms	10	Twenty-nine Palms, Reserve Support Unit
Colorado	Aurora	30	Headquarters, Marine Air Control Squadron 23, Marine Air Control Group 48
			4th Force Imagery Interpretation Unit
			Battery P, 5th Battalion, 14th Marines
		50	Tactical Air Operation Center Detachment, MACS 24, Marine Air Control Group 48
Connecticut	New Haven	10	1st Truck Platoon, Direct Support Motor Transport Company A & B, 6th MT Bn
	Plainville	10	Company C, 1st Battalion, 25th Marines
Delaware	Wilmington	10	3rd and 4th Platoons, Bulk Fuel Company C, Bulk Fuel Company C (-), 6th ESB
Florida	Hialeah	20	Anti-Tank (TOW) and Scout Platoons (Rein), 8th Tank Battalion
			33rd Interrogator - Translator Team
	Jacksonville	10	Company B (-), 4th Assault Amphibian Battalion
	Orlando	20	Direct Support Motor Transport Company A, 6th Motor Transport Battalion
			Collecting and Clearing Company B, 4th Medical Battalion
	Pensacola	10	Liaison Training Company
	Tallahassee	10	Company C, 8th Tank Battalion
	Tampa	20	Headquarters and Service Company, 4th Assault Amphibian Battalion
			Headquarters, 4th Assault Amphibian Battalion
	West Palm Beach	10	1226 Marine Drive
			West Palm Beach, Florida 33409-6298
Georgia	Albany	20	Special Training Allowance Pool (STAP)
			Detachment 1, Supply Platoon, Supply Company, 4th Supply Battalion
	Augusta	10	2nd Direct Support Platoon, Motor Transport Maintenance Company, 4th MaintBn
	Marietta	300	Headquarters, Marine Wing Support Squadron 472, Marine Wing Support Group 47
			Marine Aviation Logistics Squadron 42, Marine Aircraft Group 42
			Headquarters, Marine Aircraft Group 42
			Headquarters and Service Company, 4th Dental Battalion
			Battery B, 4th Low Altitude Air Defense Battalion, Marine Air Control Group 48
			Battery B, 4th Low Altitude Air Defense Battalion, Marine Air Control Group 48
			Headquarters and Service Detachment, 4th LAAD Battalion, MACG 48
			Headquarters, Headquarters and Service Battalion
			Headquarters, Headquarters and Service Battalion
			Marine Light Attack Helicopter Squadron 773 (-) (HMLA-773), Marine Aircraft Group 42
			Marine Fighter Attack Squadron 142 (VMFA-142), Marine Aircraft Group 42
			Headquarters, 4th Dental Battalion
	Rome	10	Detachment 1, Ammunition Company, 4th Supply Battalion
	Savannah	10	246 Blanton Road, Bldg 1031, Suite 100
			Savannah, Georgia 31406
Hawaii	Honolulu	10	4th Force Reconnaissance Company (-)
Idaho	Boise	10	Company C, 4th Tank Battalion
Illinois	Chicago	45	Headquarters and Service Company, 2nd Battalion, 24th Marines
			2nd Battalion, 24th Marines
			35th Interrogator - Translator Team
	Highwood	60	Headquarters, Marine Air Control Group 48

State	City	Seats	Reserve Unit
			Headquarters, Marine Wing Communications Squadron 48, Marine Air Control Group 48
			Marine Wing Communications Squadron 48, Detachment A (Rear), MACG 48
			Marine Tactical Air Command Squadron 48, Marine Air Control Group 48
	Joliet	10	2711 McDonough Street
			Joliet, Illinois 60436-9756
	Peoria	10	Company C, 6th Engineer Support Battalion
	Rock Island	10	General Support and Maintenance Company, 4th Maintenance Battalion
	Waukegan	10	Weapons Company, 2nd Battalion, 24th Marines
Indiana	Fort Wayne	10	Detachment 1, Communications Company, Headquarters and Service Battalion
	Indianapolis	20	Detachment 2, Electronic Maintenance Company, 4th Maintenance Battalion
			Detachment, Communications Company (-), Headquarters Battalion
	South Bend	10	Company B, 6th Engineer Support Battalion
	Terre Haute	10	Company K, 3rd Battalion, 24th Marines
Iowa	Des Moines	10	Company E (-), 2nd Battalion, 24th Marines
	Waterloo	10	Battery D, 2nd Battalion, 14th Marines
Kansas	Topeka	10	2nd General Support Ammunition Platoon, Ammo Company, 4th Supply Battalion
	Wichita	10	Detachment 1, Engineer Maintenance Company, 4th Maintenance Battalion
		10	Electronic Maintenance Company, 4th Maintenance Battalion
Kentucky	Fort Knox	10	Company A, 8th Tank Battalion
	Lexington	10	Military Police Company A (-), Headquarters and Service Battalion
Louisiana	Baton Rouge	10	Weapons Company, 3rd Battalion, 23rd Marines
	Belle Chasse	300	Marine Wing Headquarters Squadron 4 (-) (MWSH-4)
			Marine Air Support Detachment, NAS JRB New Orleans
			Detachment C, Marine Aircraft Group 42
			Marine Air Logistics Squadron 42, Detachment C, Marine Aircraft Group 42
			Marine Light Attack Helicopter Squadron 775 (HMLA-775), Detachment A, MAG 42
	Bossier City	10	1440 Swan Lake Road
			Bossier City, Louisiana 71111
	Broussard	10	Anti-Tank (TOW) Platoon, 23rd Marines
	New Orleans	800	Headquarters, 4th Marine Division
			Headquarters, Marine Forces Reserve
			Marine Corps Band, New Orleans
			Headquarters, 4th Marine Aircraft Wing
			3rd Battalion, 23rd Marines
			Headquarters, 4th FSSG
			Headquarters, Headquarters Battalion
			Headquarters and Service Company, 3rd Battalion, 23rd Marines
			Marine Forces Reserve Force Chaplain's Office
Maine	Topsham	10	Company A, 1st Battalion, 25th Marines
Maryland	Andrews AFB	300	Detachment A, Marine Aircraft Group 49
			Marine Fighter Attack Squadron 321 (VMFA-321), Marine Aircraft Group 49
			Marine Air Support Detachment, Andrews AFB, Marine Air Support Detachments
			Marine Heavy Helicopter Squadron 772 (HMH-772), Marine Aircraft Group 49
	Baltimore	20	Headquarters, 4th Combat Engineer Battalion
			Headquarters and Service Company, 4th Combat Engineer Battalion
	Frederick	10	Company B, 4th Light Armored Reconnaissance Battalion
Massachusetts	Camp Edwards	45	1st Battalion, 25th Marines
			Headquarters and Service Company, 1st Battalion, 25th Marines
			Weapons Company, 1st Battalion, 25th Marines
	Chicopee	300	Marine Wing Support Squadron 474, Detachment B, Marine Wing Support Group 47
			Marine Air Support Squadron 6 (MASS-6), Marine Air Control Group 48
		10	Anti-tank (TOW) Platoon, 25th Marines
	Lawrence	10	Ordnance Contact Team, Ordnance Maintenance Company, 4th MaintBn
	Worcester	20	Headquarters, 25th Marines

State	City	Seats	Reserve Unit
			Headquarters Company, 25th Marines
			32nd Interrogator - Translator Team
Michigan	Battle Creek	20	Engineer Support Company, 6th Engineer Support Battalion
			Bridge Company A, 6th Engineer Support Battalion
	Detroit	35	1st Battalion, 24th Marines
			Headquarters and Service Company, 1st Battalion, 24th Marines
	Grand Rapids	10	Company A, 1st Battalion, 24th Marines
	Lansing	10	Company C, 1st Battalion, 24th Marines
	Mount Clemens	300	Marine Wing Support Squadron 472, Detachment B, Marine Wing Support Group 47
			Headquarters, Marine Wing Support Group 47
			Detachment B, 4th Maintenance Battalion
	Saginaw	10	Company B, 1st Battalion, 24th Marines
Minnesota	Minneapolis	50	Marine Wing Support Squadron 471, Detachment A, Marine Wing Support Group 47
	Twin Cities	10	6400 Bloomington Road
			Twin Cities, Minnesota 55111-4002
Mississippi	Gulfport	10	4th Platoon, Company A, 4th Assault Amphibian Battalion
	Jackson	10	4th Platoon, Company A, 4th Assault Amphibian Battalion
Missouri	Bridgeton	60	3rd Battalion, 24th Marines
			Headquarters and Service Company, 3rd Battalion, 24th Marines
			Dragon (Anti-Tank) Platoon, 3rd Battalion, 24th Marines
	Kansas City	30	Headquarters Company, 24th Marines
			Headquarters, 24th Marines
			Anti-Tank (TOW) Platoon, 24th Marines
			Headquarters, Marine Corps Reserve Support Command
	Springfield	10	Weapons Company, 3rd Battalion, 24th Marines
Montana	Billings	10	Company B, 4th Reconnaissance Battalion
Nebraska	Omaha	10	Engineer Maintenance Company (-), 4th Maintenance Battalion
Nevada	Las Vegas	20	Weapons Platoon, Company F, 2nd Battalion, 23rd Marines
			Bulk Fuel Transport Platoon, General Support Motor Transport Company, 6th MT Bn
	Reno	10	Detachment, 4th Force Reconnaissance Company (-)
New Hampshire	Bedford	10	Company B, 1st Battalion, 25th Marines
New Jersey	Dover	10	Company G, 2nd Battalion, 25th Marines
	Red Bank	20	Headquarters and Service Company, 6th Motor Transport Battalion
			Headquarters, 6th Motor Transport Battalion
	West Trenton	10	Battery G, 3rd Battalion, 14th Marines
New Mexico	Albuquerque	10	Company D, 4th Reconnaissance Battalion
New York	Albany	10	Company D, 4th Reconnaissance Battalion
	Amityville	10	Company D, 4th Reconnaissance Battalion
	Brooklyn	40	Support Company, 6th Communications Battalion
			Headquarters Company, 6th Communications Battalion
			Headquarters, 6th Communications Battalion
			Service Company, 6th Communications Battalion
	Buffalo	10	Company I, 3rd Battalion, 25th Marines
	Garden City	55	2nd Battalion, 25th Marines
			Weapons Company, 2nd Battalion, 25th Marines
			34th Interrogator - Translator Team
			Headquarters and Service Company, 2nd Battalion, 25th Marines
	Newburgh	75	Detachment B, Marine Aircraft Group 49
			Marine Air Logistics Squadron 49, Marine Aircraft Group 49
			Marine Air Logistics Squadron 49, Marine Aircraft Group 49
	Rochester	20	Headquarters, 8th Tank Battalion
			Headquarters and Service Company, 8th Tank Battalion

State	City	Seats	Reserve Unit
	Syracuse	10	Company B, 8th Tank Battalion
North Carolina	Camp Lejeune	35	4th FSSG Forward (Nucleus), East, HqSvcBn
			Marine Expeditionary Force Augmentation CE (II MACE), Atlantic
			Camp Lejeune, Reserve Support Unit
	Charlotte	10	6115 North Hills Circle
			Charlotte, North Carolina 28213
	Greensboro	20	Communications Company (-), Headquarters and Service Battalion
			Communications Company (-), Headquarters and Service Battalion
	Raleigh	10	SASSY Management Unit, Supply Company , 4th Supply Battalion
	Wilmington	10	2nd Longshoreman Platoon, 2nd Beach and Terminal Operations Company (-), 4th LSB
Ohio	Akron	10	Company G, 3rd Battalion, 25th Marines
	Brookpark	35	3rd Battalion, 25th Marines
			Headquarters and Service Company, 3rd Battalion, 25th Marines
	Cincinnati	10	3190 Gilbert Ave
			Cincinnati, Ohio 45207
	Columbus	10	Company L, 3rd Battalion, 25th Marines
	Dayton	10	1st Military Police Platoon, Companies A and B, Headquarters and Service Battalion
	Perrysburg	10	Weapons Company, 1st Battalion, 24th Marines
	Vienna	10	Landing Support Equipment Company, 4th Landing Support Battalion
Oklahoma	Broken Arrow	10	Anti-Tank Training Company
	Oklahoma City	10	5316 South Douglas Blvd.
			Oklahoma City, Oklahoma 73150
Oregon	Eugene	10	Bridge Company B, 6th Engineer Support Battalion
	Portland	45	Headquarters and Service Company (Rein), 6th Engineer Support Battalion
			CSSE 41 (CSSE-41), Headquarters and Service Battalion
			Headquarters, 6th Engineer Support Battalion
Pennsylvania	Allentown	10	Motor Transport Contact Maintenance Section, 4th Maintenance Battalion
	Connellsville	10	Connellsville Airport Road
			Connellsville, Pennsylvania 15425
	Ebensburg	10	2nd Platoon, Truck Company, Headquarters Battalion
	Erie	10	Truck Company (-), Headquarters Battalion
	Folsom	10	Bulk Fuel Company C (-), 6th Engineer Support Battalion
	Harrisburg	10	Company E, 2nd Battalion, 25th Marines
	Johnstown	10	136 Jaycee Drive Suite 20
			Johnstown, Pennsylvania 15904
	North Versailles	10	Military Police Company B (-), Headquarters and Service Battalion
		10	Surgical Company A (-), 4th Medical Battalion
	Philadelphia	10	3rd Battalion, 14th Marines
		10	Headquarters Battery, 3rd Battalion, 14th Marines
	Reading	10	Battery I, 3rd Battalion, 14th Marines
	Willow Grove	300	Headquarters, Marine Aircraft Group 49
			Marine Wing Support Squadron 474, Marine Wing Support Group 47
			Marine Heavy Helicopter Squadron 772 (HMH-772), Marine Aircraft Group 49
			Detachment C, 4th Maintenance Battalion
			Air Traffic Control Detachment B, Marine Air Control Squadron 24, Marine Air Control Group 48
			Marine Light Attack Helicopter Squadron, Detachment A (HMLA-773), MAG 49
	Wyoming	30	Marine Wing Support Squadron 472, Detachment A, Marine Wing Support Group 47
Puerto Rico	Roosevelt Road	10	3rd Longshoreman Platoon, 2nd Beach and Terminal Operations Company (-), 4th LSB
Rhode Island	Providence	10	General Support Motor Transport Company, 6th Motor Transport Battalion
South Carolina	Charleston	10	Company C (Rein), 4th Landing Support Battalion
	Eastover	10	Company D, 8th Tank Battalion
	Greenville	10	Ammunitions Company, 4th Supply Battalion

Tennessee	Chattanooga	10	Battery M, 4th Battalion, 14th Marines
	Johnson City	10	2109 West Market Street
			Johnson City, Tennessee 37603
	Knoxville	10	Company D (Rein), 4th Combat Engineer Battalion
		10	Collecting and Clearing Company A, 4th Medical Battalion
	Memphis	10	Company K, 3rd Battalion, 23rd Marines
	Nashville	10	Company I, 3rd Battalion, 24th Marines
Texas	Abilene	10	973 Avenue A-2, Dyes AFB
			Abilene, Texas 79607-1720
	Amarillo	10	Detachment, Headquarters and Service Company (-), 4th Tank Battalion
	Austin	10	Weapons Company, 1st Battalion, 23rd Marines
	Corpus Christi	10	Company C (-), 1st Battalion, 23rd Marines
	Dallas	20	Headquarters Battery, 14th Marines
			Headquarters, 14th Marines
	El Paso	10	Battery N, 5th Battalion, 14th Marines
	Fort Worth	300	Marine Fighter Attack Squadron 112 (VMFA-112), Marine Aircraft Group 41
			2nd Battalion, 14th Marines
			Marine Aviation Logistics Squadron 41, Marine Aircraft Group 41
			Headquarters, Marine Aircraft Group 41
			Headquarters Battery, 2nd Battalion, 14th Marines
			Marine Aerial Refueler Transport Squadron 234 (VMGR-234), MAG 41
			Marine Wing Support Squadron 471 (-), Marine Wing Support Group 47
			Air Traffic Control Detachment A, Marine Air Control Squadron 24, MACG 48
			Headquarters, 8th Marine Reserve District
	Galveston	10	4th Platoon, Company B, 4th Assault Amphibian Battalion
	Harlingen	10	2nd & 3rd Platoons, Company C, 1st Battalion, 23rd Marines
	Houston	45	1st Battalion, 23rd Marines
			Headquarters and Service Company, 1st Battalion, 23rd Marines
			Company A, 1st Battalion, 23rd Marines
	Lubbock	10	Direct Support Motor Transport Company B, 6th Motor Transport Battalion
	San Antonio	10	Headquarters, 4th Reconnaissance Battalion
		10	Headquarters and Service Company, 4th Reconnaissance Battalion
		10	Company A, 4th Reconnaissance Battalion
		10	Company C, 4th Reconnaissance Battalion
	Texarkana	20	Bulk Fuel Platoon (Rein), General Support Company, 6th Motor Transport Battalion
			Bulk Fuel Platoon (Rein), General Support Company, 6th Motor Transport Battalion
	Waco	10	Ordnance Maintenance Company (-), 4th Maintenance Battalion
Utah	Riverton	10	Company C, 4th Light Armored Reconnaissance Battalion
	Salt Lake City	10	Company F (-), 2nd Battalion, 23rd Marines
Virginia	Lynchburg	10	Company C (Rein), 4th Combat Engineer Battalion
	Newport News	10	Medical Logistics Company (-), 4th Supply Battalion
		10	Headquarters and Service Company, 4th Supply Battalion
	Norfolk	200	Marine Heavy Helicopter Squadron 774 (HMM-774), Marine Aircraft Group 42
			Company A (-), 4th Assault Amphibian Battalion
			Marine Air Logistics Squadron 42, Detachment B, Marine Aircraft Group 42
	Quantico	10	Company D, 4th Light Armored Reconnaissance Battalion
	Richmond	10	I & I Staff 6000 Strathmore Road
			Richmond, Virginia 23831
	Roanoke	10	5301 Barnes Avenue North West
			Roanoke, Virginia 24019
	Virginia Beach	35	Headquarters, Marine Air Control Squadron 24, Marine Air Control Group 48
			Tactical Air Operation Center Detachment, Marine Air Control Squadron 24, MACG 48
Washington	Fort Lewis	40	Company A, 4th Landing Support Battalion
			Headquarters and Service Company, 4th Landing Support Battalion
			Headquarters, 4th Landing Support Battalion
			Bulk Fuel Company B (-), 6th Engineer Support Battalion
	Oak Harbor	20	Detachment G, 4th Maintenance Battalion
			Marine Wing Support Squadron 473, Detachment B, Marine Wing Support Group 47
	Spokane	10	Battery A, 1st Battalion, 14th Marines

	Yakima	10	Company B, 4th Tank Battalion
Washington D.C.	Anacostia	60	Surgical Support Company B, 4th Medical Battalion
			Supply Company (-), 4th Supply Battalion
			Rations Company, 4th Supply Battalion
			10th Counter Intelligence Team
			12th Counter Intelligence Team
			4th Civil Affairs Group
West Virginia	Charleston	10	Company A, 4th Combat Engineer Battalion
	Moundsville	10	Weapons Company, 3rd Battalion, 25th Marines
Wisconsin	Green Bay	40	Marine Wing Support Squadron 471, Detachment B, Marine Wing Support Group 47
			Detachment F, 4th Maintenance Battalion
	Madison	10	Company G, 2nd Battalion, 24th Marines
	Milwaukee	10	Company F, 2nd Battalion, 24th Marines
Wyoming	Cheyenne	25	Early Warning and Control Detachment, Marine Air Control Squadron 23, Marine Air Control Group 48
TOTAL SEATS - APPROXIMATE		7170	

APPENDIX C MARINE CORPS RECRUITING COMMANDS

Recruiting Location	NMCI Users
Headquarters, Quantico, VA	121
East Coast Recruiting Region, Parris Island, SC	30
West Coast Recruiting Region, San Diego, CA	40
1ST MARINE CORPS DISTRICT	
DISTRICT Headquarters	80
RS ALBANY	60
RS BUFFALO	60
RS EASTERN NEW ENGLAND	60
RS EASTERN PENNSYLVANIA	60
RS NEW JERSEY	60
RS NEW YORK	60
RS WESTERN NEW ENGLAND	60
RS WESTERN PENNSYLVANIA	60
4TH MARINE CORPS DISTRICT	
DISTRICT Headquarters	80
RS BALTIMORE	60
RS CHARLESTON	60
RS CINCINNATI	60
RS CLEVELAND	60
RS DETROIT	60
RS LOUISVILLE	60
RS RICHMOND	60
6TH MARINE CORPS DISTRICT	
DISTRICT Headquarters	80
RS ATLANTA	60
RS COLUMBIA	60
RS FT LAUDERDALE	60
RS JACKSONVILLE	60
RS MONTGOMERY	60
RS NASHVILLE	60
RS ORLANDO	60
RS RALEIGH	60
8TH MARINE CORPS DISTRICT	
DISTRICT Headquarters	100
RS ALBUQUERQUE	60
RS DALLAS	60
RS DENVER	60

RS HOUSTON	60
RS LITTLE ROCK	60
RS NEW ORLEANS	60
RS OKLAHOMA CITY	60
RS SAN ANTONIO	60
9TH MARINE CORPS DISTRICT	
DISTRICT Headquarters	90
RS CHICAGO	60
RS INDIANAPOLIS	60
RS KANSAS CITY	60
RS LANSING	60
RS MILWAUKEE	60
RS DES MOINES	60
RS ST LOUIS	60
RS TWIN CITIES	60
12TH MARINE CORPS DISTRICT, San Diego	
DISTRICT Headquarters	116
RS LOS ANGELES	60
RS ORANGE	60
RS PHOENIX	60
RS PORTLAND	60
RS SACRAMENTO	60
RS SALT LAKE CITY	60
RS SAN DIEGO	60
RS SAN FRANCISCO	60
RS SEATTLE	60
TOTAL APPROXIMATE NMCI SEATS	3496